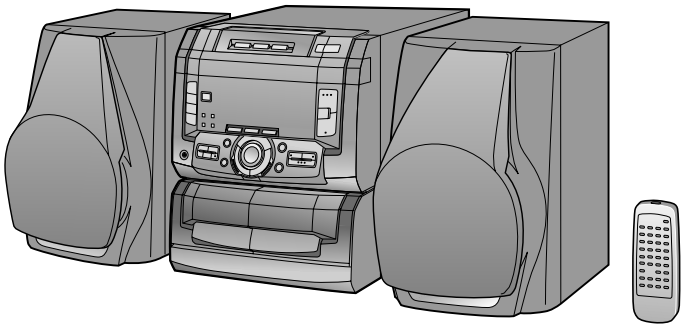
SHARP SERVICE MANUAL

No. S6840CDC451H/



CD-C451H

CD-C451H mini component system consisting of CD-C451H mini component system and CP-C451H Speaker System.

• In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

COMPACT disc DIGITAL AUDIO

R·D·S EON

DOLBY SURROUND PRO • LOGIC

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SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

SAFETY PRECAUTION FOR SERVICE MANUAL

Precaution to be taken when replacing and servicing the Laser Pickup.

The AEL (Accessible Emission Level) of Laser Power Output for this model is specified to be lower than Class I Requirements. However, the following precautions must be observed during servicing to protect your eyes against exposure to the Laser beam

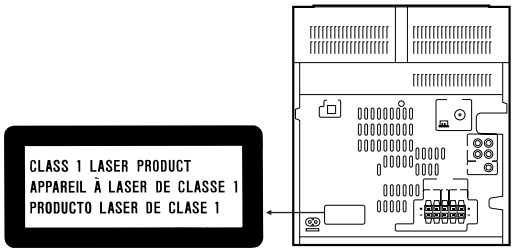
(1) When the cabinet has been removed, the power is turned on without a compact disc, and the Pickup is on a position outer than the lead-in position, the Laser will light for several seconds to detect a disc. Do not look into the Pickup Lens.
(2) The Laser Power Output of the Pickup inside the unit and replacement service parts have already been adjusted prior to shipping.
(3) No adjustment to the Laser Power should be attempted when replacing or servicing the Pickup.
(4) Under no circumstances look directly into the Pickup Lens at any time.
(5) CAUTION - Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser Diode Properties
Material: GaAIAs
Wavelength: 780 nm
Emission Duration: continuous
Laser Output: max. 0.6 mW

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

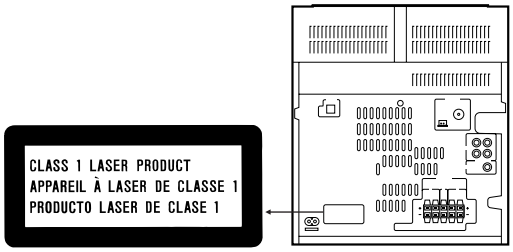
VARNING - OM APPARATEN ANVÄNDS PÅANNAT SÄTTÄN I DENNA BRUKSANVISNING SPECIFICERAS. KANANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

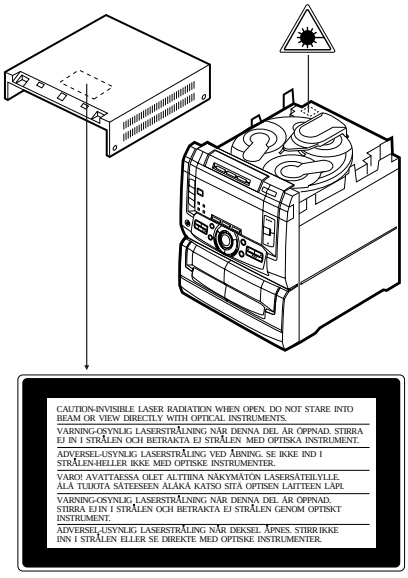
(Except For U.K./Australia/New zealand)



LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT
LASER TŘÍDY 1
LASER TRIEDY 1

(FOR U.K./Australia/New zealand)

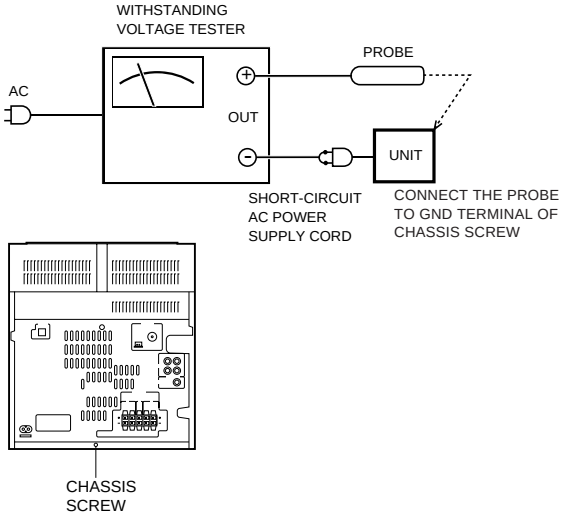



CAUTION-INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.
VARNING-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRÅLEN MED OPTISKA INSTRUMENT.
ADVERSEL-USYNLIG LASERSTRÅLING VED ÅBNING. SE IKKE IND I STRÅLEN-HELLER IKKE MED OPTISKE INSTRUMENTER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ TUIJOTA SÄTEESEEN ÄLÄKÄ KAITSO SITÄ OPTISEN LAITTEEN LÄPI.
VARNING-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRÅLEN GENOM OPTISKT INSTRUMENT.
ADVERSEL-USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.

IMPORTANT SERVICE NOTES (FOR U.K. ONLY)

Before returning the unit to the customer after completion of a repair or adjustment it is necessary for the following withstand voltage test to be applied to ensure the unit is safe for the customer to use.
Setting of Withstanding Voltage Tester and set.

Set name	set value
Withstanding Voltage Tester	
Test voltage	4,240 VPEAK 3,000 VRMS
Set time	6 secs
Set current(Cutoff current)	4 mA
Unit	
Judgment	
OK: The “GOOD” lamp lights. NG: The “NG” lamp lights and the buzzor sounds.	



FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

CD-C451H

● General

Power source:	AC 230-240 V, 50 Hz
Power consumption:	81 W
Dimensions:	Width; 270 mm (10-5/8") Height; 303 mm (11-13/16") Depth; 350 mm (13-13/16")
Weight:	6.6 kg (14.2 lbs.)

● Amplifier section

Output power: (Except FOR GERMANY)	MPO; 176 W (88 W + 88 W) (10 % T.H.D.) RMS; 80 W (40 W + 40 W) (10 % T.H.D.)
Output power: (FOR GERMANY)	PMPO; 352 W (total) MPO; 176 W (88 W + 88 W) (DIN 45 324) RMS; 80 W (40 W + 40 W) (DIN 45 324)
Input terminals:	Video/Auxiliary (audio signal) ¥ 2; 500 mV/47 kohms
Output terminals:	Speakers; 6 ohms Headphones; 16-50 ohms (recommended; 32 ohms) Pre-output; 500 mV/47 kohms

● Compact disc player section

Type:	3-disc multi-play compact disc player
Signal readout:	Non-contact, 3-beam semiconductor laser pickup
D/A converter:	1-bit D/A converter
Frequency response:	20 - 20,000 Hz
Dynamic range:	90 dB (1 kHz)

● Tuner section

Frequency range:	FM; 87.5 - 108 MHz MW; 522 - 1,620 kHz LW; 153 - 281 kHz

● Cassette deck section

Type:	Compact cassette tape
Frequency response:	50 - 14,000 Hz (Normal tape)
Motor:	DC motor with electronic governor ¥ 1
Signal/noise ratio:	55 dB (TAPE 1, playback) 50 dB (TAPE 2, recording/playback)
Bias and erasure system:	AC
Tape speed:	4.76 cm/sec. (1-7/8 ips.)
Wow and flutter: (Except FOR GERMANY)	0.15 % (WRMS)
Wow and flutter: (FOR GERMANY)	0.2 % (DIN 45 511, playback)
Heads:	TAPE-1: Playback 1 TAPE-2: Record/playback ¥ 1 Erase ¥ 1

CP-C451H

● Speaker section

Type:	3-way type [130 mm (5-1/8") woofer, 50 mm (2") tweeter and super tweeter]
Maximum input power:	80 W
Impedance:	6 ohms
Dimensions:	Width; 200 mm (7-7/8") Height; 300 mm (11-13/16") Depth; 253 mm (10")
Weight:	2.7 kg (5.8 lbs.)/each

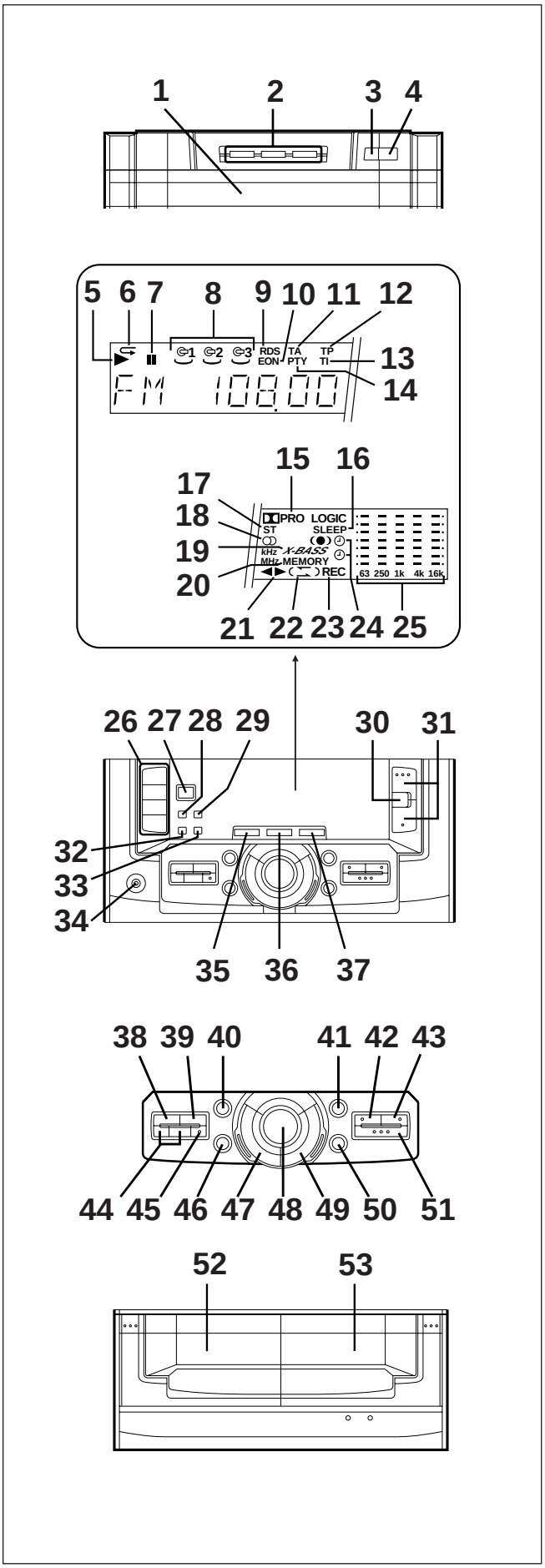
Specifications for this model are subject to change without prior notice.

NAMES OF PARTS

CD-C451H

■ Front panel

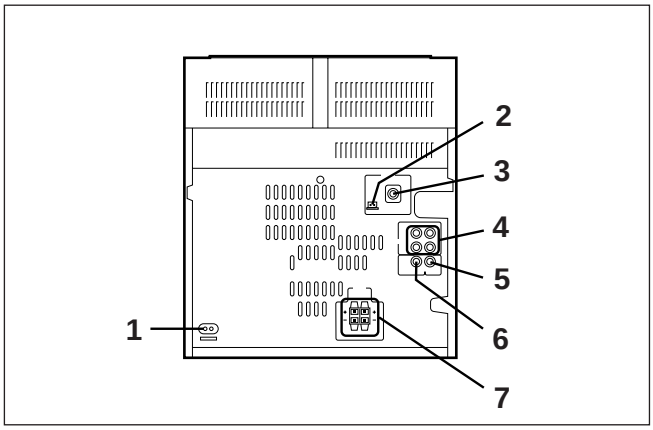
1. Disc Tray
2. Disc Number Selector Buttons
3. Disc Skip Button
4. Open/Close Button
5. (CD) Play Indicator
6. (CD) Repeat Indicator
7. (CD) Pause Indicator
8. (CD) Disc Number Indicators
9. RDS Indicator
10. EON Indicator
11. Traffic Announcement Indicator
12. Traffic Programme Indicator
13. Traffic Information Indicator
14. Programme Type Indicator
15. Dolby Pro Logic Indicator
16. Sleep Indicator
17. FM Stereo Mode Indicator
18. FM Stereo Indicator
19. Extra Bass Indicator
20. (CD/TUNER) Memory Indicator
21. (TAPE 2) Direction Indicators
22. (TAPE) Reverse Mode Indicator
23. (TAPE) Record Indicator
24. Timer Indicator
25. Spectrum Analyzer/Volume Level/Balance Indicator
26. Function Selector Buttons
27. On/Stand-by Button
28. Programme Type/Traffic Information Search Button
29. EON Button
30. Extra Bass Button
31. Volume Up/Down Buttons
32. ASPM Button
33. Display Mode Selector Button
34. Headphone Socket
35. Dolby Pro Logic Button
36. Virtual Surround Button
37. QSOUND Button
38. Clock Button
39. Timer/Sleep Button
40. (TAPE) Record Pause Button
41. Equalizer Selector/Demo Mode Button
42. (CD) Record Start Button
    (TAPE) Dubbing Start Button
43. (TUNER) Beat Cancel Button
    (TAPE) Dubbing Start Button
44. Tuning and Time Up/Down Buttons
45. Memory/Set Button
46. (CD) Track Down/Review Button
    (TUNER) Preset Down Button
47. (TAPE 2) Reverse Play Button
48. (CD/TAPE) Stop Button
49. (TAPE 1) Play Button/(TAPE 2) Forward Play Button
    (CD) Play/Repeat Button
50. (CD) Track Up/Cue Button
    (TUNER) Preset Up Button
51. (TAPE 2) Reverse Mode Button
52. (TAPE 1) Cassette Compartment
53. (TAPE 2) Cassette Compartment



CD-C451H

■ Rear panel

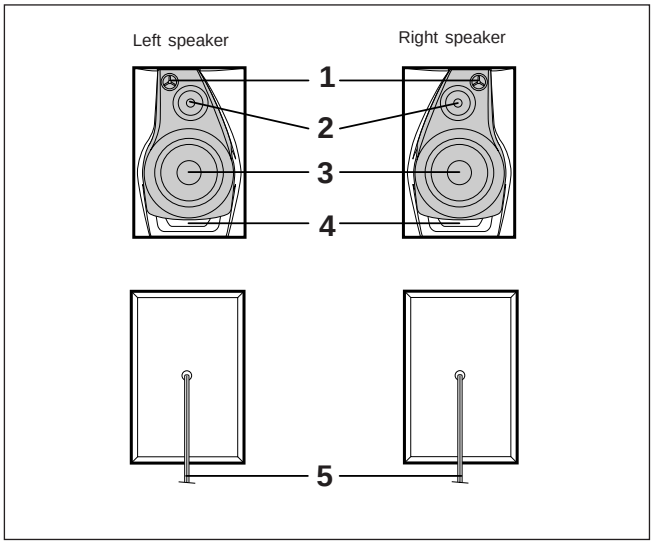
1. AC Power Input Socket
2. MW/LW Loop Aerial Input Socket
3. FM 75 Ohms Aerial Socket
4. Video/Auxiliary (Audio Signal) Input Sockets
5. Surround Output Socket
6. Centre Output Socket
7. Speaker Terminals



CP-C451H

■ Speaker section

1. Super Tweeter
2. Tweeter
3. Woofer
4. Bass Reflex Duct
5. Speaker Wire



CD-C451H

■ Remote control

1. Remote Control Transmitter LED
2. Centre Level Buttons
3. Dolby Pro Logic Button
4. Virtual Surround Button
5. QSOUND Button
6. Test Tone Button
7. Balance Control Buttons
8. Surround Level Buttons

● Tuner control section

9. Programme Type/Traffic Information Search Button
10. Preset Up/Down Buttons

● CD control section

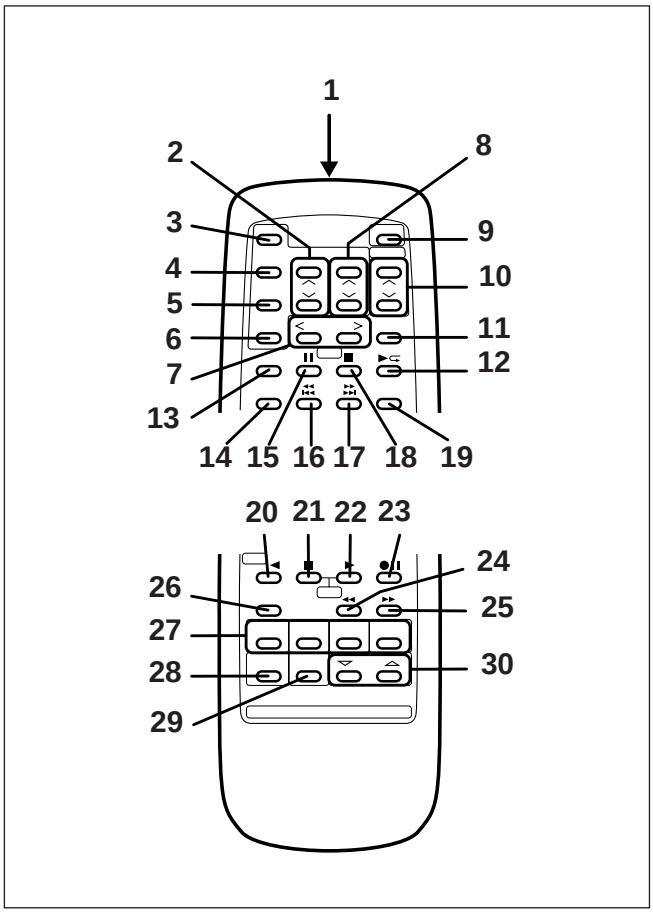
11. Disc Skip Button
12. Play/Repeat Button
13. Memory Button
14. Clear Button
15. Pause Button
16. Track Down/Review Button
17. Track Up/Cue Button
18. Stop Button
19. Random Button

● Tape control section

20. (TAPE 2) Reverse Play Button
21. (TAPE 1/2) Stop Button
22. (TAPE 1) Play Button
    (TAPE 2) Forward Play Button
23. (TAPE 2) Record Pause Button
24. (TAPE 2) Rewind Button
25. (TAPE 2) Fast Forward Button

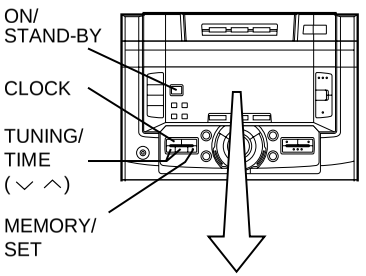
● Common section

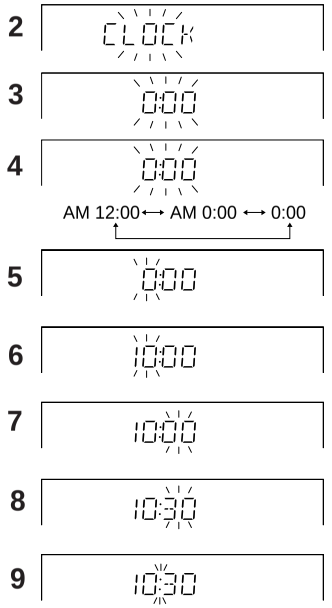
26. Equalizer Mode Button
27. Function Selector Buttons
28. On/Stand-by Button
29. Extra Bass Buttons
30. Volume Up/Down Buttons



SETTING THE CLOCK

In this example, the clock is set for the 24-hour (0:00) system.





(Main unit operation)

1 Press the ON/STAND-BY button to enter the stand-by mode.

2 Press the CLOCK button.

3 Within 5 seconds, press the MEMORY/SET button.

4 Press the TUNING/TIME (∨or∧) button to select the time display mode.

"0:00" → The 24-hour display will appear. (0:00 - 23:59)
"AM 12:00" → The 12-hour display will appear. (AM or PM 12:00 - 11:59)
"AM 0:00" → The 12-hour display will appear. (AM or PM 0:00 - 11:59)

- Note that this can only be set when the unit is first installed or it has been reset.

5 Press the MEMORY/SET button.

6 Press the TUNING/TIME (∨or∧) button to adjust the hour.

- Press the TUNING/TIME (∨or∧) button once to advance the time by 1 hour. Hold it down to advance continuously.
- When the 12-hour display is selected, "AM" will change automatically to "PM".

7 Press the MEMORY/SET button.

8 Press the TUNING/TIME (∨or∧) button to adjust the minutes.

- Press the TUNING/TIME (∨or∧) button once to advance the time by 1 minute. Hold it down to change the time in 5 minute intervals.
- The hour setting will not advance even if minutes advance from "59" to "00".

9 Press the MEMORY/SET button.

- The clock starts operating from "0" seconds. (Seconds are not displayed.)

Note:

- In the event of a power failure or when the AC power lead is disconnected, the clock display will go out.
  When the AC power supply is restored, the clock display will flash on and off to indicate the time when the power failure occurred or when the AC power lead was disconnected.
  If this happens, follow the procedure below to change the clock time.

To change the clock time:

When the unit is in the stand-by mode:

① Press the MEMORY/SET button.
② Perform steps 6 - 9 above.

When the unit is on:

① Press the CLOCK button.
② Within 5 seconds, press the MEMORY/SET button.
③ Perform steps 6 - 9 above.

To see the time display:

Press the CLOCK button.

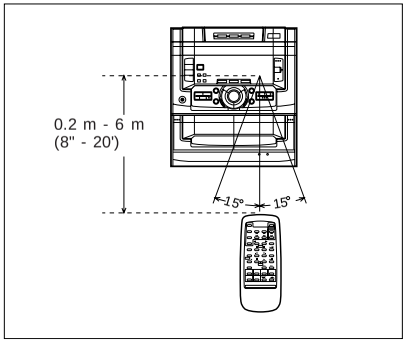
- The time display will appear for about 5 seconds.

To change the time display mode:

① Perform steps 1 - 2 in the section "RESETTING THE MICROCOMPUTER",.

② Perform steps 1 - 9 above.

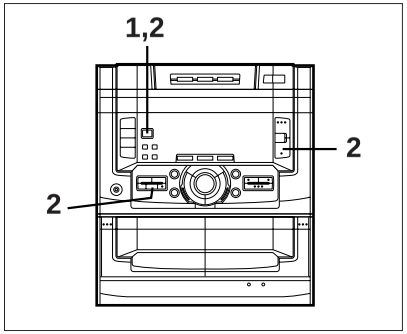
PREPARTION FOR USE



Notes concerning use:

- Replace the batteries if the operating distance becomes reduced or if operation becomes erratic.
- Periodically clean the transmitter LED on the remote control and the sensor on the main unit with a soft cloth.
- Exposing the sensor on the main unit to strong light may interfere with operation. Change the lighting or the direction of the unit.
- Keep the remote control away from moisture, excessive heat, shock, and vibrations.

RESETTING THE MICROCOMPUTER



Reset the microcomputer under the following conditions:

- To erase all of the stored memory contents (clock and timer settings, and tuner and CD presets).
- If the display is not correct.
- If the operation is not correct.

1 Press the ON/STAND-BY button to enter the stand-by mode.

2 While pressing down the VOLUME ▽ button and the TUNING/TIME ∧ button, hold down the ON/STAND-BY button for at least 1 second.

Caution:

- The operation explained above will erase all data stored in memory including clock and timer settings, and tuner and CD presets.

DISASSEMBLY

Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take cassette tape and compact disc out of the unit.
2. Be sure to remove the power supply plug from the wall outlet before starting to disassemble the unit.
3. Take off nylon bands or wire holders where they need to be removed when disassembling the unit. After servicing the unit, be sure to rearrange the leads where they were before disassembling.
4. Take suffcient care on static electricity of integrated circuits and other circuits when servicing.

CD-C451H

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top Cabinet	1. Screw ..... (A1) x4	7-1
2	Side Panel (Left/right)	1. Screw ..... (B1) x6	7-1
3	CD Player Unit/ CD Tray Cover	1. Turn on the power supply, open the disc tray, take out the CD cover, and close. (Note 1) 2. Hook ..... (C1) x3 3. Hook ..... (C2) x2 4. Screw ..... (C3) x1 5. Socket ..... (C4) x2	7-2
4	Back Board	1. Screw ..... (D1) x12 2. Socket ..... (D2) x1	8-1
5	Tuner PWB	1. Screw ..... (E1) x1 2. Socet ..... (E2) x1	8-1
6	Main PWB	1. Screw ..... (F1) x1 2. Socket ..... (F2) x2 3. Flat Wire ..... (F3) x2 4. Tip Wire ..... (F4) x1 5. Socket ..... (F5) x1	8-2
7	Front Panel	1. Screw ..... (G1) x2 2. Hook ..... (G2) x2	8-2
8	Display PWB/ Switch PWB	1. Screw ..... (H1) x12	8-3
9	Tape Mechanism	1. Open the cassette holder. 2. Screw ..... (J1) x5	8-3
10	Power Amp. PWB	1. Screw ..... (K1) x4 2. Socket ..... (K2) x2 3. Push Rivet ..... (K3) x4	8-4
11	CD Servo PWB	1. Screw ..... (L1) x1 2. Cover ..... (L2) x4	8-5
12	Turntable	1. Screw ..... (M1) x1 2. Cover ..... (M2) x1	8-6
13	CD Player Base	1. Screw ..... (N1) x2 2. Guide ..... (N2) x2	8-6
14	CD Changer Mechanism	1. Screw ..... (P1) x4	8-7
15	CD Mechanism	1. Screw ..... (Q1) x1	8-7

Note 1:

How to open the changer manually. (Fig.7-3)

1. Insert the tip of fine screwdriver into the hole of CD player base, and press down the worm wheel **< A >** .
2. Then, turn fully the lock lever in the arrow direction through the hole on the loading chassis bottom in this state. After that, push forward the CD player base.

CD-C451H

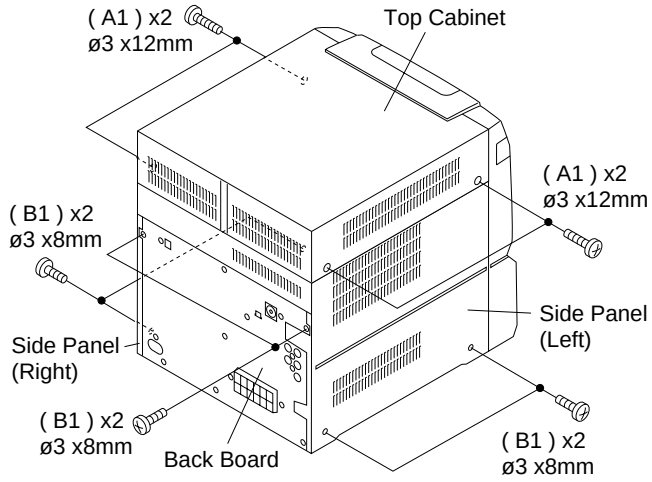


Figure 7-1

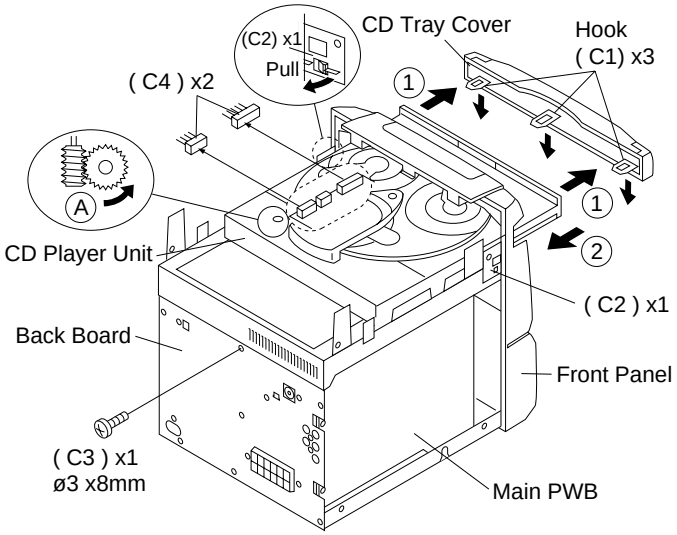


Figure 7-2

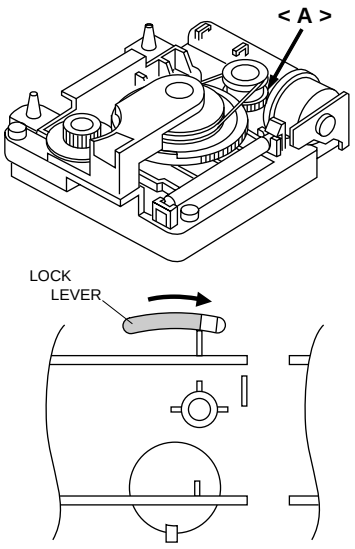


Figure 7-3

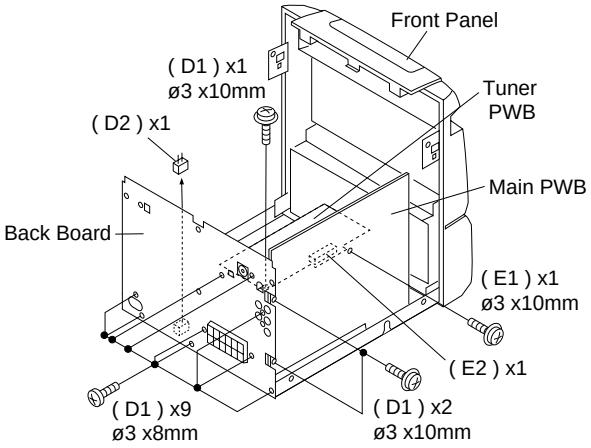


Figure 8-1

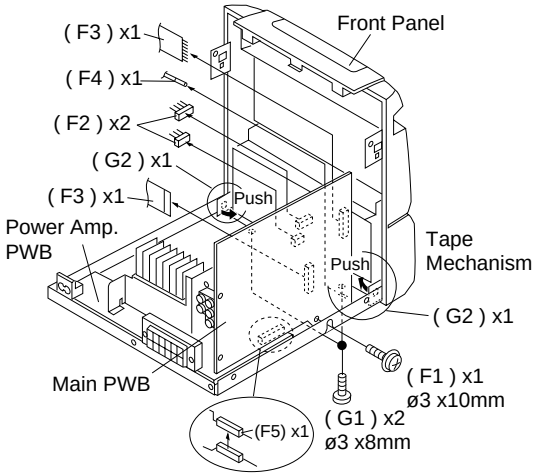


Figure 8-2

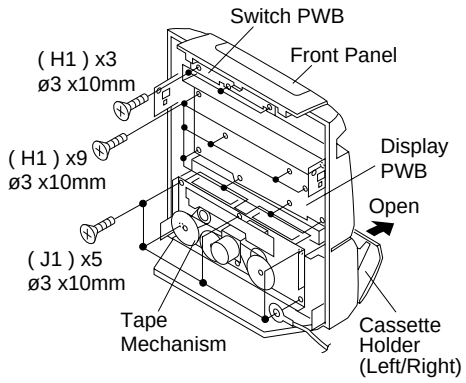


Figure 8-3

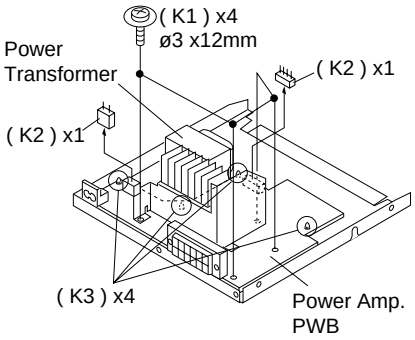


Figure 8-4

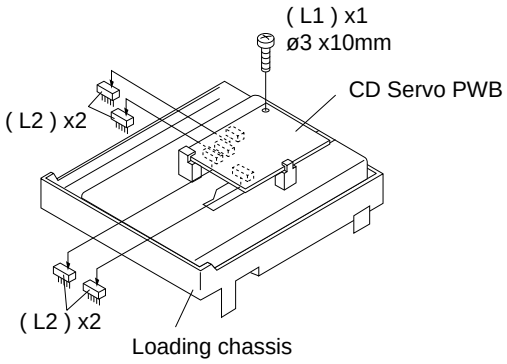


Figure 8-5

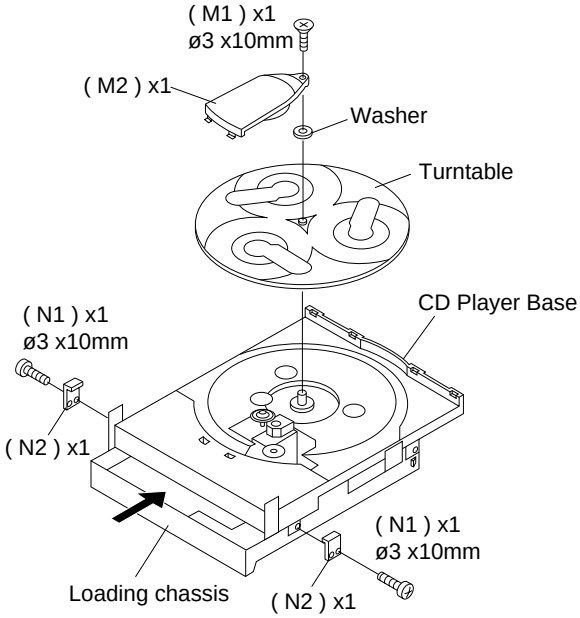
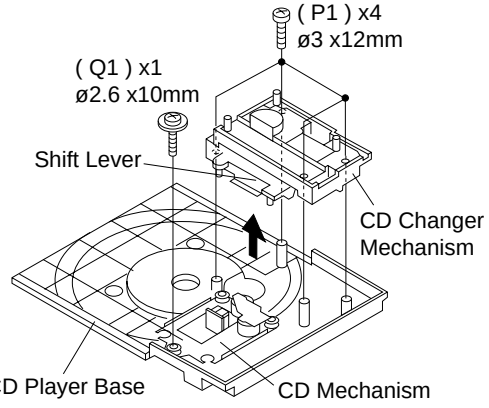


Figure 8-6



Be careful when installing the CD changer mechanism. Install the CD changer mechanism on the CD player base after the shift lever has been set in the highest position.

Figure 8-7

CP-C451H

STEP	REMOVAL	PROCEDURE	FIGURE
1	Front Speaker	1. Net ..... (A1) x1 2. Fromt Panel ..... (A2) x1 3. Screw ..... (A3) x2 4. Screw ..... (A4) x4 5. Screw ..... (A5) x2	9-1 9-2

CP-C451H

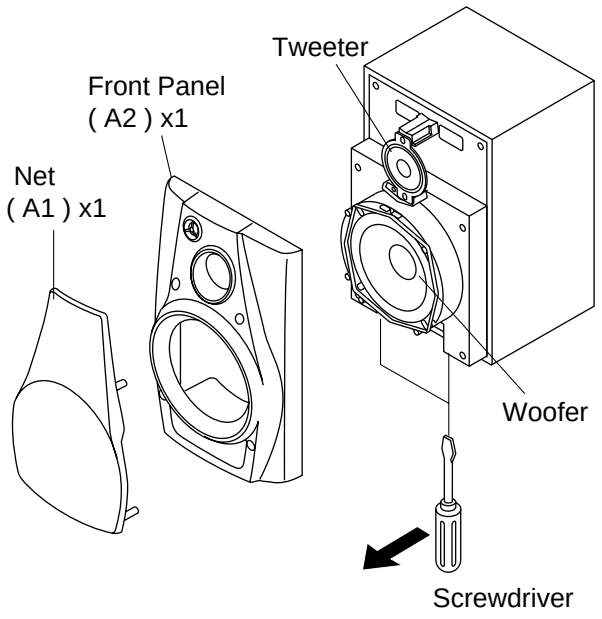


Figure 9-1

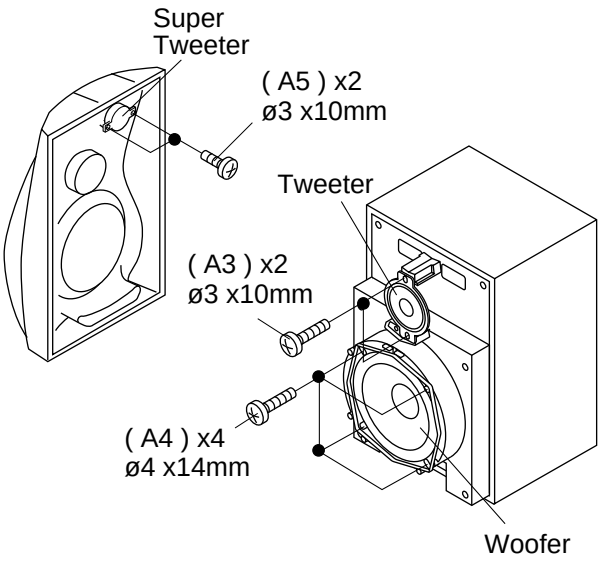


Figure 9-2

REMOVING AND REINSTALLING THE MAIN PARTS

CD MECHANISM SECTION

Perform steps 1, 2, 3, 14 and 15 of the disassembly method to remove the CD mechanism.

How to remove the turntable up/down motor (See Fig. 10-1)

1. Remove the screws (A1) x 2 pcs., to remove the turntable up/down motor.

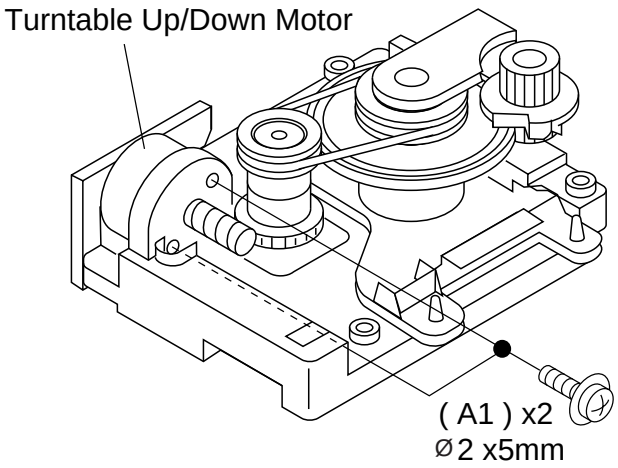


Figure 10-1

How to remove the pickup (See Fig. 10-2)

1. Remove the screws (B1) x 2 pcs., to remove the shaft (B2) x 1 pc.
2. Remove the stop washer (B3) x 1 pc., to remove the gear (B4)x 1 pc.
3. Remove the pickup.

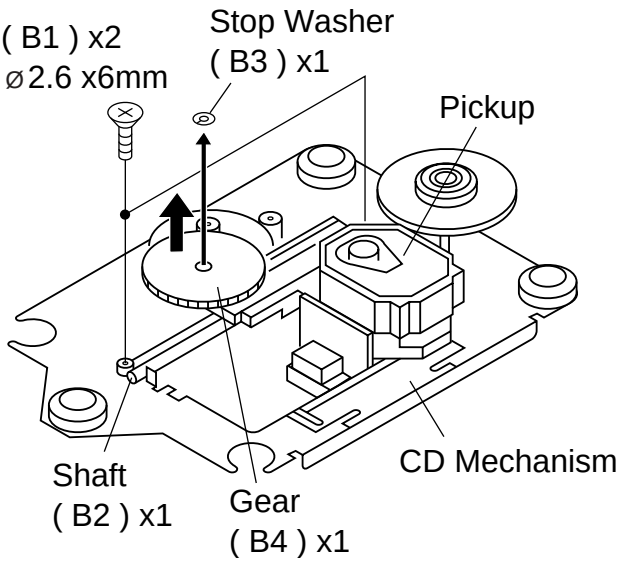


Figure 10-2

ADJUSTMENT

MECHANISM SECTION

• Driving Force Check

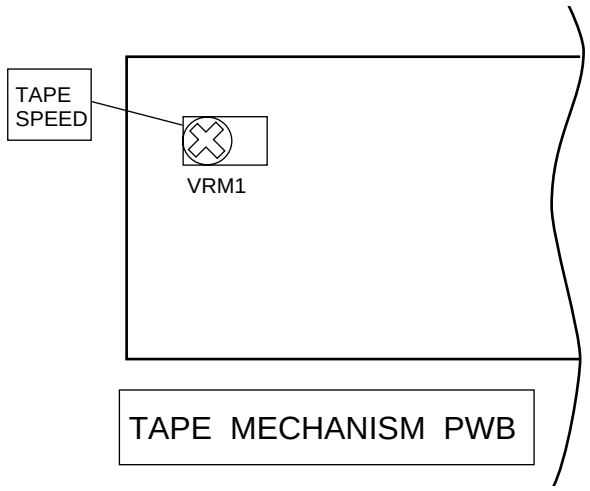
Torque Meter	Specified Value
Play: TW-2412	Tape 1: Over 80 g Tape 2: Over 80 g

• Torque Check

Torque Meter	Specified Value	
	Tape 1	Tape 2
Play: TW-2111	30 to 60 g. cm	30 to 100 g.cm
Fast forward: TW-2231	—	50 to 100 g.cm
Rewind: TW-2231	—	50 to 100 g.cm

• Tape Speed

	Test Tape	Adjusting Point	Specified Value	Instrument Connection
Normal speed	MTT-111	VRM1	3,000 ± 30 Hz	Speaker terminal



TUNER SECTION

fL: Low-range frequency
fH: High-renge frequency

• AM IF/RF

Signal generator: 400 Hz, 30%, AM modulated

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Parts	Instrument Connection
IF	450 kHz	1,620 kHz	T351	*1
MW Band Coverage	—	522 kHz	(fL): T306 1.1 ± 0.1 V	*2
MW Tracking	990 kHz	990 kHz	(fL): T302	*1
LW Band Coverage	—	153 kHz	(fL): T305 1.5 ± 0.1 V	*2
LW Tracking	225 kHz	225 kHz	(fL): T301	*1

*1. Input: Antenna, Output: TP302
*2. Input: Antenna, Output: TP301

• FM

Notes:

1: Description of the "FM IF Adjustment" is not carried on this Manual. It is because the IF coil in the FM front end section has been best adjusted in the factory so that its further adjustment is not needed at the field. When replacing the FM front end assembly, no adjustment is needed either.

2: The parts in the FM front end section are prepared in a complete unit, so you can't obtain each part individually

• FM Mute Level

Signal generator: 1 kHz, 40 kHz dev., FM modulated

Frequency	Frequency Display	Adjusting Parts	Instrument Connection
98.00 MHz (25 dBμV)	98.00 MHz	VR351	Input: Antenna Output: Speaker Terminal

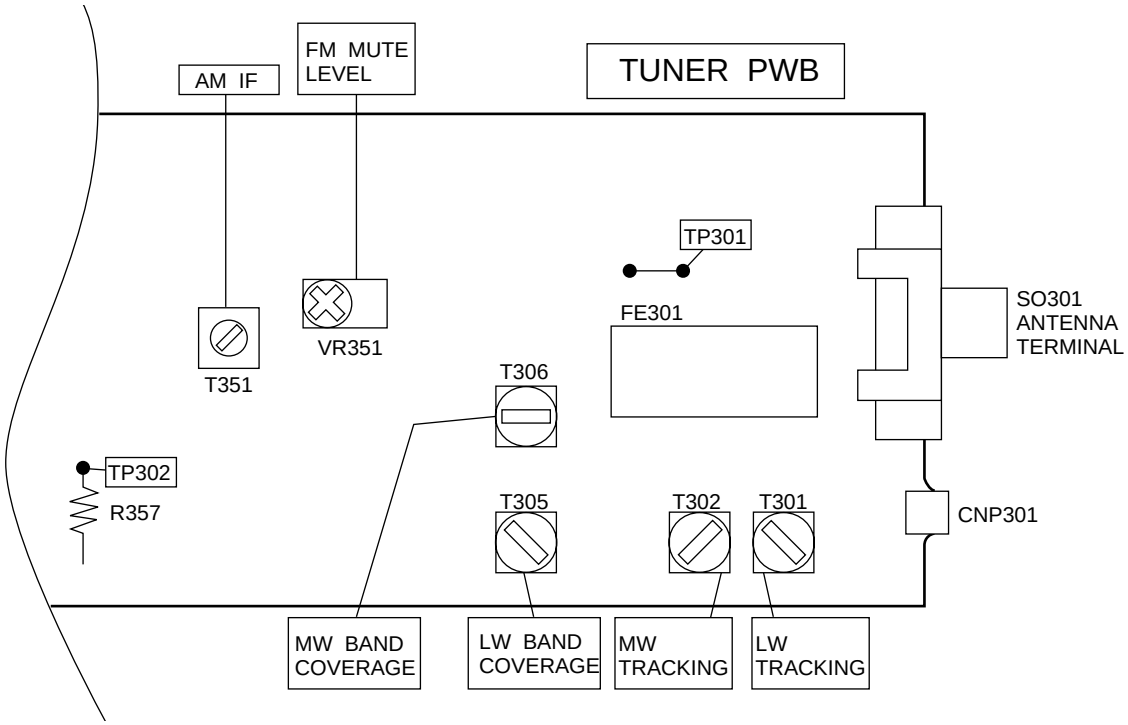


Figure 11 ADJUSTMENT POINTS

TEST MODE

• Setting the test mode

Any one of test mode can be set by pressing several keys as follows.

<REC. PAUSE> + <CD> + <POWER> TEST: CD operation test

• TEST mode

Function — CD test mode

Setting of TEST mode
Indication of CD TST mode (Fig.12-1)
OPEN/CLOSE operation is manual operation.
The pickup can be moved by using the (▶▶) or (◀◀) key.
IL is not performed.

<MEMORY> LASER ON — <MEMORY> Tracking on the spot. SERVO OFF PLAY — <MEMORY> Tracking on the spot. SERVO ON PLAY — <STOP> STOP

<PLAY> key input — TOC. IL is performed, and the ordinary PLAY is performed. — Press <STOP> key. — Stop

If the following key is pressed during PLAY, it is possible to specify directly any Track No.
<Disc Number 1> key: Track 4
<Disc Number 2> key: Track 9
<Disc Number 3> key: Track 15

Note:

Only in STOP state it is possible to slide the pickup with the (▶▶) or (◀◀) key.

VOL. --- Last memory
BAL. --- CENTER
R.GEQ. --- FLAT
X-BAS --- OFF

Canceling method - POWER OFF

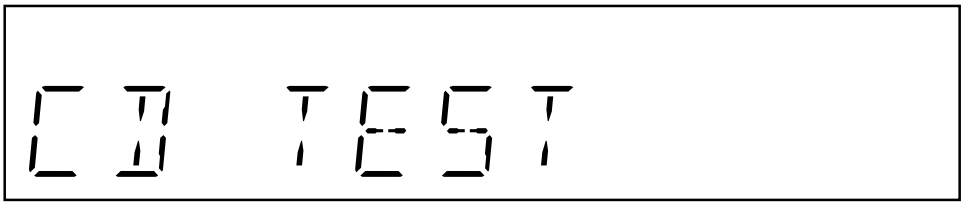


Figure 12-1

CD SECTION

Since this CD system incorporates the following automatic adjustment function, when the pickup is replaced, it is not necessary to readjust it.
Since this CD unit does not need adjustment, the combination of PWB and laser pickup unit is not restricted.

• Automatic adjustment item

1. Focus offset (Fig.12-2)
2. Tracking offset (Fig.12-3)
3. E/F balance (tracking error balance) (Fig.12-4)
4. RF level AGC function (HF level: constant)
5. RF level automatic follow-up of the tracking gain

This automatic adjustment is performed each time a disc is changed. Therefore, each disc is played back using the optimal settings.

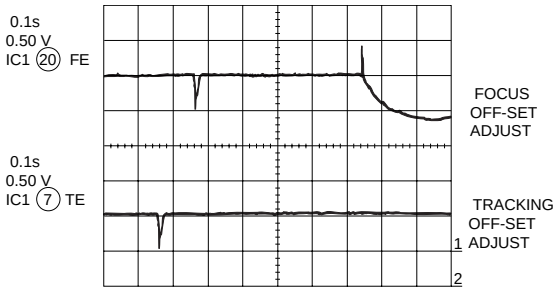


Figure 12-2

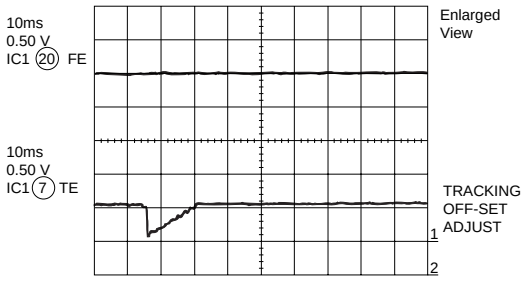


Figure 12-3

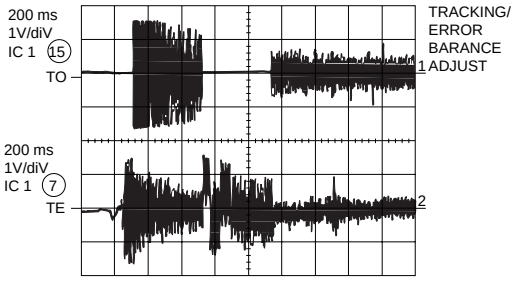


Figure 12-4

EXPLANATION OF DOLBY SURROUND PRO LOGIC AND EVALUATION METHOD

Outline

- Namely, two speakers are connected in parallel to one amplifier.
- In the Pro Logic BYPASS mode the amplifier for C-ch (center channel) and the amplifier for S-ch (surround channel) are in MUTE state. The SP output is cut.
- In the normal mode of Pro Logic ON mode the amplifiers for C-ch and S-ch are in operative state, so that the SP output appears.
- In the Phantom mode of Pro Logic ON mode the amplifier for C-ch is in MUTE state, so that the SP output is cut. The amplifier for S-ch (surround) is in operative state, so that the SP output appears

• State of element output and terminal output in specific mode

State of set / Output point		Dolby Pro Logic Bypass mode	Dolby Pro Logic On mode Normal mode	Dolby Pro Logic On mode Phantom mode
IC501	12 pin L-out	Output enabled state	Output enabled state	Output enabled state
	11 pin R-out	Output enabled state	Output enabled state	Output enabled state
IC501	9 pin C-out	No output	Output enabled state	No output
IC501	10 pin S-out	No output	Output enabled state	Output enabled state
SP OUT (SO901)	L-ch	Output enabled state	Output enabled state	Output enabled state
	R-ch	Output enabled state	Output enabled state	Output enabled state
SP OUT C-ch (SO901)		No output in MUTE (Q604) state	Output enabled state	No output in MUTE (Q604) state
SP OUT S-ch (SO901)		No output in MUTE (Q603) state	Output enabled state	Output enabled state

Test tone output

• Pro Logic ON Normal mode

Press the remote control TEST TONE button.

→Output of only L-ch →Output of only C-ch
↑ ↓
Output of only S-ch ← Output of only R-ch

The test tone (noise) is repeatedly output for output period (2 sec).

In this case the following indication appears repeatedly.

→TEST →L-ch →C-ch
↑ ↓
S-ch ← R-ch

• Pro Logic ON Phantom mode

Press the remote control TEST TONE button.

→Output of only L-ch →Output of only R-ch
↑ ↓
← Output of only S-ch

The test tone (noise) is repeatedly output for output period (2 sec).

In this case the following indication appears repeatedly.

→TEST → L-ch → R-ch
↑ ↓
← S-ch←

Relation between VIDEO IN input and output in Pro Logic ON state

(1) L-ch/R-ch same phase input into VIDEO IN input jack in VIDEO Function mode

Output point		Normal mode
SP out (SO901)	L-ch	Almost no output (only omitting component)
	R-ch	Almost no output (only omitting component)
(SO901) SP out C-ch		Input signal is output.
(SO901) SP out S-ch		Almost no output (only omitting component)

Output point		Phantom mode
SP out (SO901)	L-ch	Input signal is output.
	R-ch	Input signal is output.
(SO901) SP out C-ch		SP cut, no output
(SO901) SP out S-ch		Almost no output (only omitting component)

(2) L-ch/R-ch reverse phase input into VIDEO IN input jack in VIDEO Function mode

(Reverse phase: Phase difference between L and R is 180°)

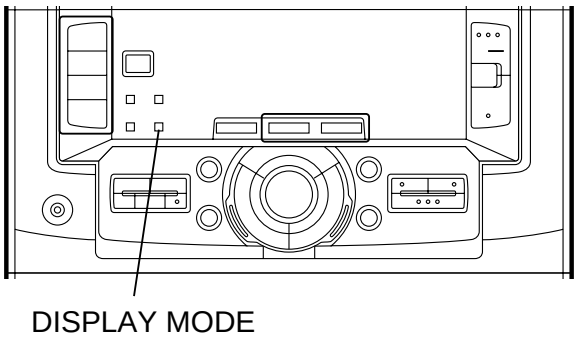
Output point		Normal mode
SP out (SO901)	L-ch	Almost no output (only omitting component)
	R-ch	Almost no output (only omitting component)
(SO901) SP out C-ch		Almost no output (only omitting component)
(SO901) SP out S-ch		Input signal is output.

Output point		Phantom mode
SP out (SO901)	L-ch	Almost no output (only omitting component)
	R-ch	Almost no output (only omitting component)
(SO901) SP out C-ch		SP cut, no output
(SO901) SP out S-ch		Input signal is output.

• Accordingly, if you want to output signal waveform to C-ch SP out, give the same phase input into L-ch/R-ch INPUT in the Pro Logic Normal mode.
If one of channels receives input, C-ch does not output. Only L-ch or R-ch outputs.

• If you want to output signal waveform to S-ch SP out, you can use either Normal mode or Phantom mode. However, 180° reverse phase input must be given to L-ch/R-ch INPUT.

RDS (Radio Data System) OPERATION



■ Receiving FM Stations with RDS (Radio Data System)

RDS is a broadcasting service which a growing number of FM stations are now providing. It allows these FM stqtions to send additional signals along with their regular programme signals. For example, the stations send their station names, and information about what type of programme they broadcast, such as sports or music, etc.
When tuned to an FM station which provide the RDS service, the RDS will appear, the station frequency (and then the station name if sent) is displayed.
The TP (Traffic Programme) will appear on the display when the received broadcast carries traffic annoucements, and the TA (Traffic Annoucement) will appear whilst a traffic announcement is being received. EON will appear whilst the EON (Enhanced Other Networks information) data is being broadcast.

Note:
When the TP and TA appear at the same time, an announcement is being made.
When only the TA appears, an announcement is not being made. (See page 17.)

■ Information Provided by RDS

With the CD-C451H, you can display two types of RDS service. To show them in the display, press the DISPLAY MODE button.
Each time you press the DISPLAY MODE button, the display will change to show the following information.

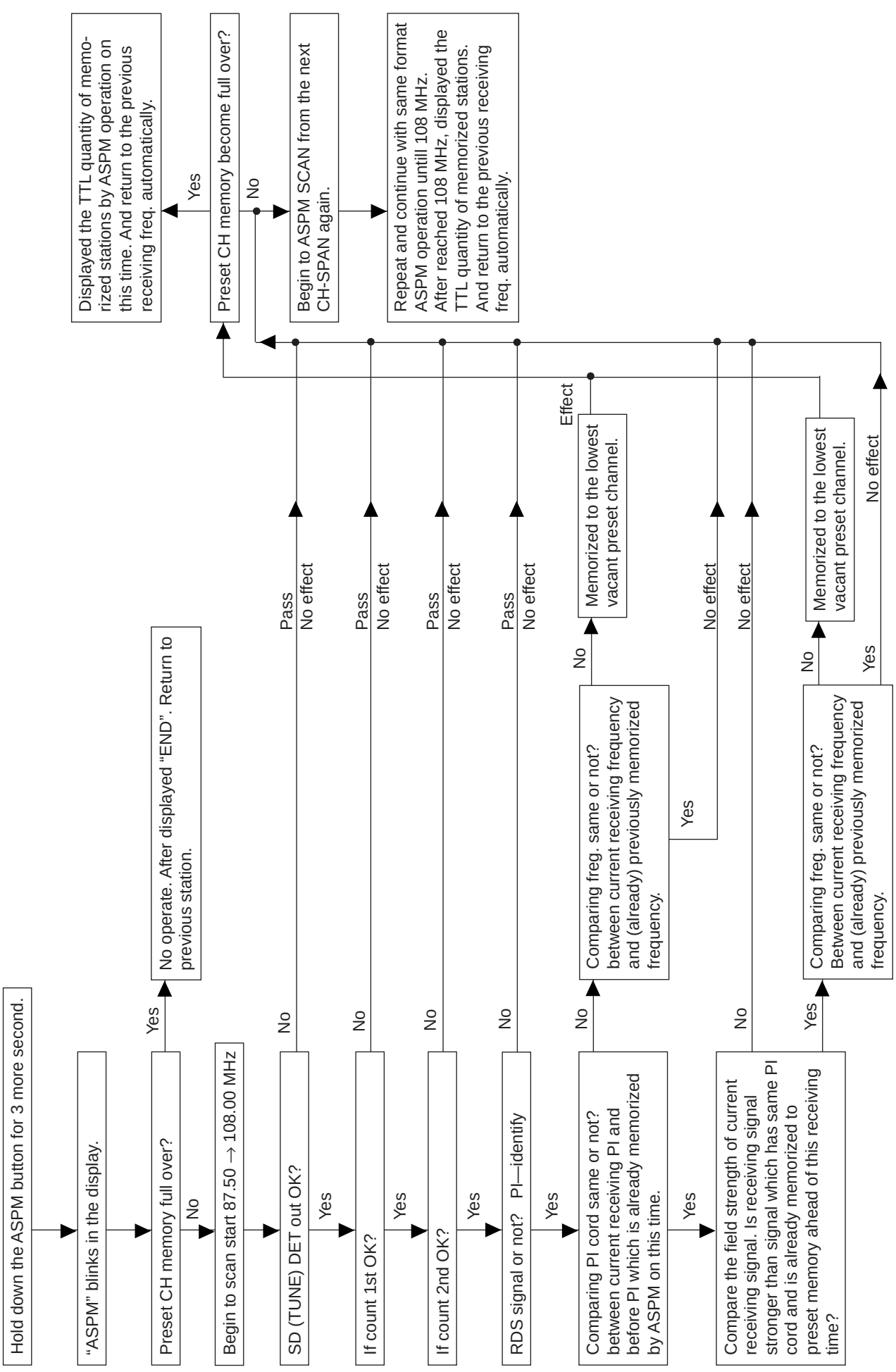
PS (Programme Service):	Station names commonly known will be diaplayed. "NO PS" appears if no signal is being sent.
PTY (Progamme Type):	Programme type will be diplayed. "NO PTY" appears if no signal is being sent.
Station Frequency:	Station frequencies.

Descriptions of the PTY (Programme Type) codes, TP (Traffic Programme) and TA (Traffic Announcement)
Eith the CD-C451H, you can search for and receive the forrowing PTY, TP and TA signals.

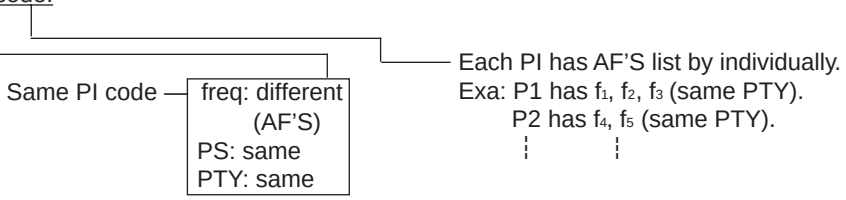
NEWS:	News
AFFAIRS:	Topical programme expanding on the current news or affairs
INFO:	Programmes on medical service, weather forecast, etc.
EDUCATE:	Educational programmes
DRAMA:	Radio plays
CULTURE:	Programmes on national or regional culture.
SCIENCE:	Programmes on national sciences and technology.
VARIED:	Other programmes like comedies or ceremonies
POP M:	Pop music
ROCK M:	Rock music
M.O.R. M:	Middle-of-the-road music (usually called "easy listening")
LIGHT M:	Light music
CLASSICS:	Classics
OTHER M:	Other music
ALARM:	Emergency broadcasts
NONE:	no Programme type (receive only)
TP:	Broadcasts which carry traffic announcements
TA:	Traffic announcements are being broadcast at present.

Note:
● When the unit is in the EON stand-by mode and a programme is selected, the unit will display "TI" instead of "TP" or "TA".

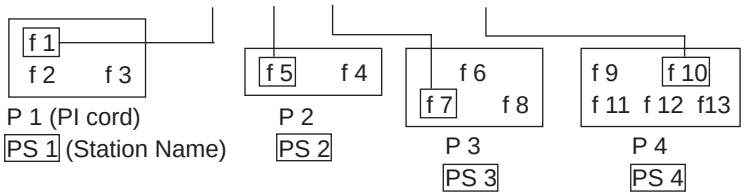
ASPM, summary operation


Hold down the ASPM button for 3 more second.
"ASPM" blinks in the display.
Preset CH memory full over?
Yes
No operate. After displayed "END". Return to previous station.
No
Begin to scan start 87.50 → 108.00 MHz
SD (TUNE) DET out OK?
No
Pass
No effect
Yes
If count 1st OK?
No
Pass
No effect
Yes
If count 2nd OK?
No
Pass
No effect
Yes
RDS signal or not? PI—identify
No
Pass
No effect
Yes
Comparing PI cord same or not? between current receiving PI and before PI which is already memorized by ASPM on this time.
No
Comparing freg. same or not? between current receiving frequency and (already) previously memorized frequency.
No
Memorized to the lowest vacant preset channel.
Effect
Yes
No effect
Yes
Compare the field strength of current receiving signal. Is receiving signal stronger than signal which has same PI cord and is already memorized to preset memory ahead of this receiving time?
No
No effect
Yes
Comparing freg. same or not? Between current receiving frequency and (already) previously memorized frequency.
No
Memorized to the lowest vacant preset channel.
Yes
No effect
Preset CH memory become full over?
Yes
Displayed the TTL quantity of memorized stations by ASPM operation on this time. And return to the previous receiving freq. automatically.
No
Begin to ASPM SCAN from the next CH-SPAN again.
Repeat and continue with same format ASPM operation untill 108 MHz. After reached 108 MHz, displayed the TTL quantity of memorized stations. And return to the previous receiving freq. automatically.

• ASPM SCAN: 87.50MHz → 108.00 MHz.
• Only RDS signal is memorized by ASPM because RDS signal has PI code and is suitable and convenient for ASPM operation.
ASPM
Comparing field strength, only one strongest RDS station is memorized of all stations (repeater relay stations) that have same PI code.



[For example] Pickup and memorized to preset CH.



Select signals (f1, f5, f7, f10) are memorized in the preset memory by ASPM.
• If tentative - ASPM operation is repeated intententionally, never memorized (over write) at the same frequecy. 1st time ASPM → strongest stations of each pi are memorized.

ASPM is not only very usefull for PTY search, but also EON operation.
2nd time ASPM → 2nd strong stations of each pi are memorized and so on.
PTY search function is equal to FM band search function as a result.

1. Introduction of RDS for CD-C451H

CD-C451H RDS function is equal to adding EON feature to the current CD-C75H RDS.
EON feature is EON—PTY and EON—TI.
Although PTY and TI indicators are separated, PTY contains TI in the PTY items (software) like current PTY search items.

EON—PTY and EON—TI are basically stand-by → receive the desired program of ON station.

2.The difference point from current CD-C75H RDS. (CD-C75H — CD-C451H)

1. PTY item: added TA.TTL 18 kind.
2. Each "TP", "TA" ind. light up or go out individually.
"TA" ind. doesn't light up on current model, CD-C75H due to none EON—TI.
3. Added 3 indicators(in FL) due to adding EON feature.
EON: Lights up only during receiving EON data (14A).
TI: During EON-TI stand-by → Light up
During receiving ON station. → blink.
PTY: During EON-PTY stanb-by → Light up
During receiving ON station. → blink.

4. No adjust type (None adjusting circuit.)
5. Added EON button.
6. Need to change RDS logo due to add EON feature.
7. Added EON—TI, EON—PTY function.

3. Summary of CD-C451H RDS—EON operation

EON—PTY: Select and set the desired "PTY" → stand-by → switch to ON(other network) Station at the start of desired PTY automatically → stay and listen to PTY of ON station → switch back to TN(This net) station automatically at the end of PTY(ON) i.e. after changing to another PTY(except AFFAIRS) or cancelling to receive PTY of ON station midway.

EON—TI: Select and set the "TI" → stand-by → switch to ON station at the start of traffic announcement automati cally → stay and listen to TA of ON station → switch back to TN station autmatically at the end of TA(ON). ie after TA(ON) is over or cancelled to receive TA of ON station midway.

When switching TN → ON station.
In case of exist 2 more stations having the desired(specified) "PTY" or "TI", the receiver will select and switch toON station comparing field strength at the same time. But when the frequency of ON station exists in the preset-memory, then reciver switches straight to that ON station(CH), without comparing field strength so can make a quick switching from TN—ON sta tion. Preset memory takes priority of switching TN—ON station.
therefore ASPM is usefull not only for PTY search but also for rapid EON switching. Anyway CD-C451H EON is basically stand-by and receiving method, along with the Guidelines for EON implementation.

EON summary notice for reference

1. EON-TI/PTY EON stand-by can be set, only when EON ind. lights up.
   While EON ind. goes out (NO EON STATION), EON stand-by can't be set.
   If the EON button is pressed, then “NO EON” is indication the display.
2. EON-TI/PTY Even if switch back ON→TN station continue to keep EON stand-by.
3. EON-TI Don’t switch TN→ON during TN broadcast TA. (same item)
4. EON-TI/PTY EON can be cancelled during receiving ON station by pressing EON button if necessary and switch back ON→TN.
5. EON-TI/PTY EON stand-by is perfectly cancelled (cleared) by pressing EON button 2 times during stand-by or powerOFF or Tun Up/Down or change band or recall pre-set CH.
6. EON-TI/PTY After setting EON stand-by, stand-by items can be confirmed by pressing EON button one time.
7. EON-TI/PTY EON button function: •EON setting
   •Confirm stand-by items
   •Cancel (ON→TN)
   •EON clear cancel (2 times)
8. EON-TI/PTY After setting EON-TI and EON-PTY stand-by, if when EON data is not transmitted, EON ind goes out and EON stand-by is automatically cancelled display “NO EON”.
9. EON-TI EON-TI stand-by can't be set. When TP=0,TA=0(TN) even if EON ind. lights up and the EON button is pressed then “NO TI” is indication the display.
10. EON-PTY Don’t switch TN→ON during TN broadcast same specified PTY. (same item of PTY)
11. EON-TI/PTY Switch TN→ON→ TN station one cycle.
    Never switch TN→ON1→ON2→ Other net to other net station.
12. EON-TI/PTY After switch TN→ON station. When ON station is NO RDS, NO signal, TA=OFF or different PTY items. The receiver switch back ON→TN displaying “NO READY”.
13. During receive ON station. when ON station become to be NO RDS, NO signal, TA=ON to OFF or different PTY item, The receiver switch back ON→TN.
14. EON-TI/PTY Switch TN→ON in case of 2 more stations exist, comparing field strength and switch to the strongest station, if these signals are same strength, switch to the first previous station.
    If same frequency as AF'Sexists in the preset memory, then switch TN→ON (preset memory station) straight.
    In case of exist 2 more preset memories of AF’S,then switch to the preset CH which taken in EON DATA first, also in this case no concern to field strength.
15. Even if switch TN→ON preset memory straight, that ON station is very weak signal, then search another AF'S (ON) station comparing field strength and switch to the strongest station as a result. Of all atations of AF'S are very weak or no good condition, then, switch back ON→TN automatically display "NO READY".
16. EON-TI/PTY No linkage volume, power ON/OFF, and switch function.

Traffic Programme code (TP)	Traffic Announcement code (TA)	Applications
OFF	OFF	This programme does notcarry traffic announcements nor does it refer, via EON, to a programme that does.
OFF	ON	This programmecarries EON information about another programme which gives traffic information.
ON	OFF	This programme carries traffic announcements but none are being broadcast at present and may also carry EON information about other traffic announcements.
ON	ON	A traffic announcement is being broadcast on this programme at present.

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with “Fusible” is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression “capacitance/withstand voltage” is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
  (P.P.): Polypropylene type
- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
  1. In the tuner section,
     ( ) indicates AM
     < > indicates FM stereo
  2. In the main section, a tape is being played back.
  3. In the deck section, a tape is being played back.
     ( ) indicates the record state.
  4. In the power section, a tape is being played back.
  5. In the CD section, the CD is stopped.
- Parts marked with “ ⚠ ” (⊏ ═ ═ ═ ⊐) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW1	OPEN/CLOSE	ON—OFF
SW2	MECHA UP	ON—OFF
SW3	DISC NUMBER	ON—OFF
SW4	PICKUP IN	ON—OFF
SW701	ON/STAND-BY	ON—OFF
SW702	CLOCK	ON—OFF
SW703	TIMER/SLEEP	ON—OFF
SW704	DISC 1	ON—OFF
SW705	DISC 2	ON—OFF
SW706	DISC 3	ON—OFF
SW707	DISC SKIP	ON—OFF
SW708	OPEN/CLOSE	ON—OFF
SW709	CD	ON—OFF
SW710	TUNER/BAND	ON—OFF
SW711	TAPE	ON—OFF
SW712	VIDEO/AUX	ON—OFF
SW713	EON	ON—OFF
SW714	PTY. /TI SEARCH	ON—OFF
SW715	ASPM	ON—OFF
SW716	DISPLAY MODE	ON—OFF
SW718	CENTER MODE/PHANTOM	ON—OFF
SW719	CENTER MODE/NORMAL	ON—OFF
SW721	DOLBY PRO LOGIC BYPASS	ON—OFF

REF. NO	DESCRIPTION	POSITION
SW723	REC PAUSE	ON—OFF
SW724	TUNING UP/TIME	ON—OFF
SW725	VOLUME UP	ON—OFF
SW726	X-BASS	ON—OFF
SW728	STOP	ON—OFF
SW729	FWD	ON—OFF
SW730	FF/PRESET UP	ON—OFF
SW731	MEMORY SET	ON—OFF
SW732	TUNING DOWN/TIME	ON—OFF
SW733	VOLUME DOWN	ON—OFF
SW734	EQUALIZER/DEMO	ON—OFF
SW736	REVERSE MODE	ON—OFF
SW737	REV	ON—OFF
SW738	REW/PRESET DOWN	ON—OFF
SW739	CD/TAPE1 EDIT	ON—OFF
SW740	BEAT CANCEL (TAPE1 EDIT)	ON—OFF
SWM 3	REC FWD	ON—OFF
SWM 4	REC RVS	ON—OFF
SWM 5	F.A.S.	ON—OFF
SWM 6	CAM	ON—OFF

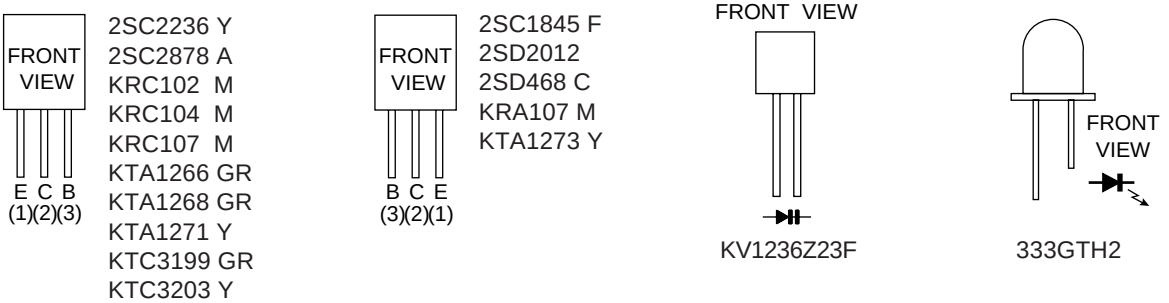


Figure 18 TYPES OF TRANSISTOR AND LED

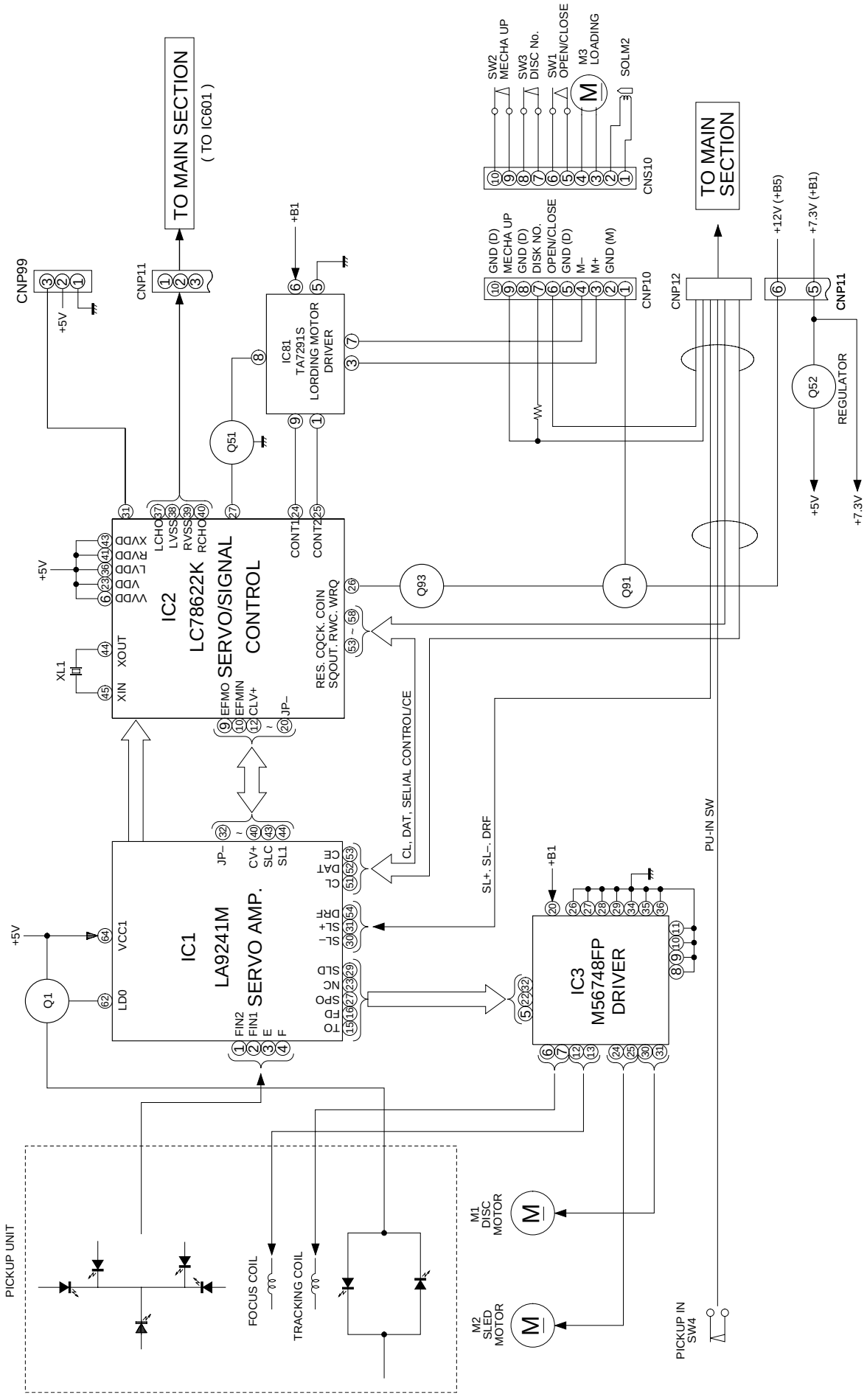


Figure 19 BLOCK DIAGRAM (1/3)

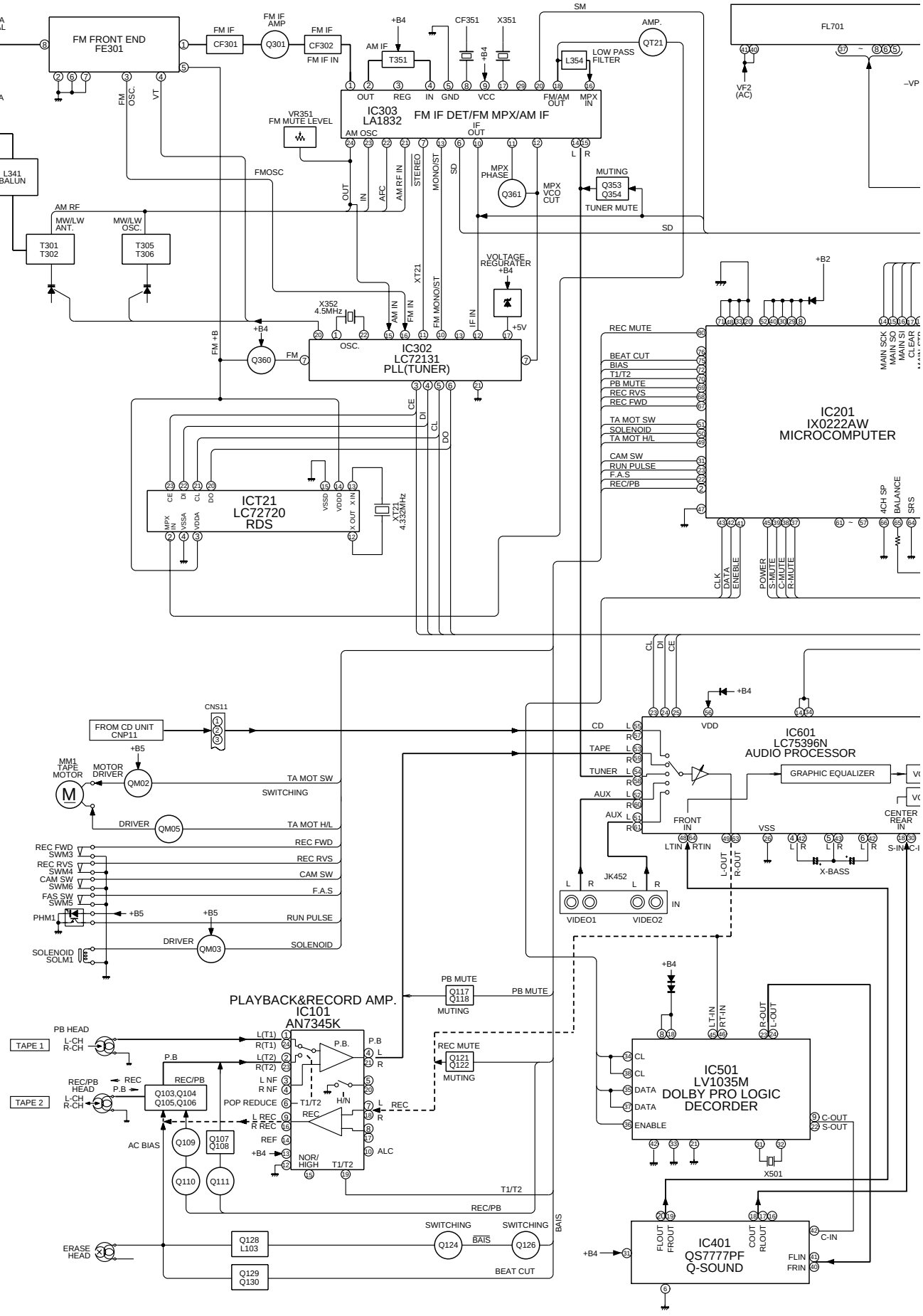


Figure 20 BLOCK DIAGRAM (2/3)

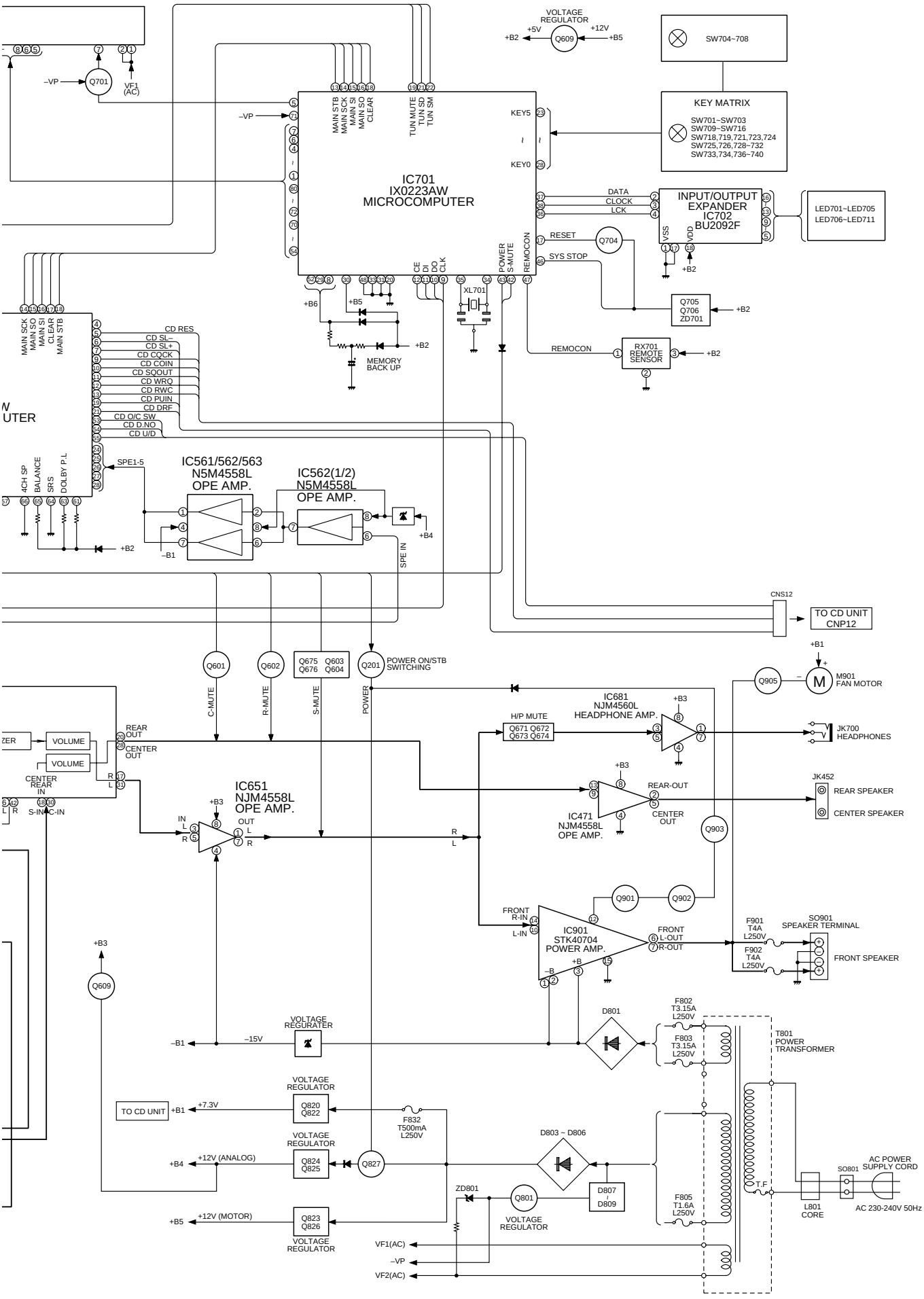
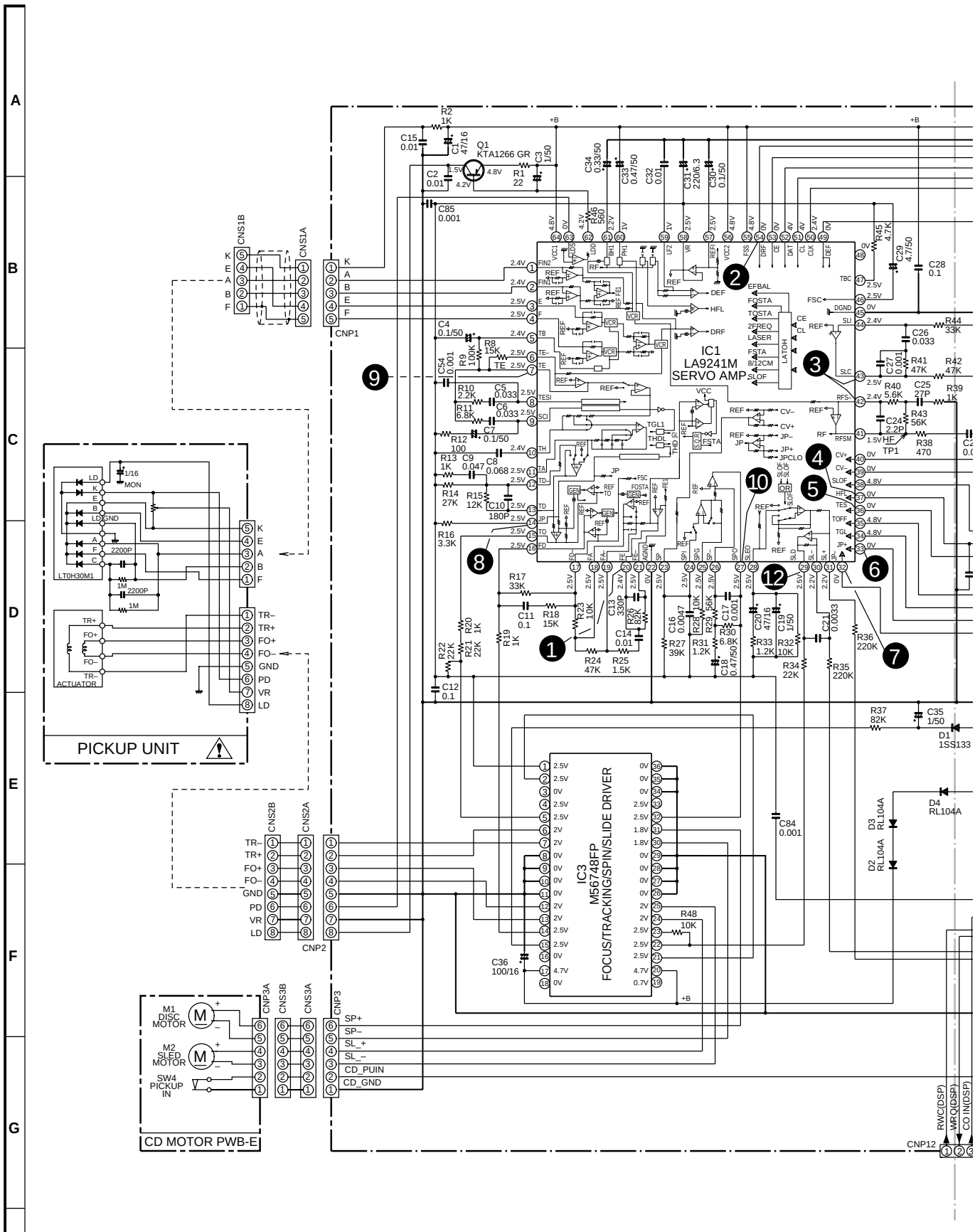
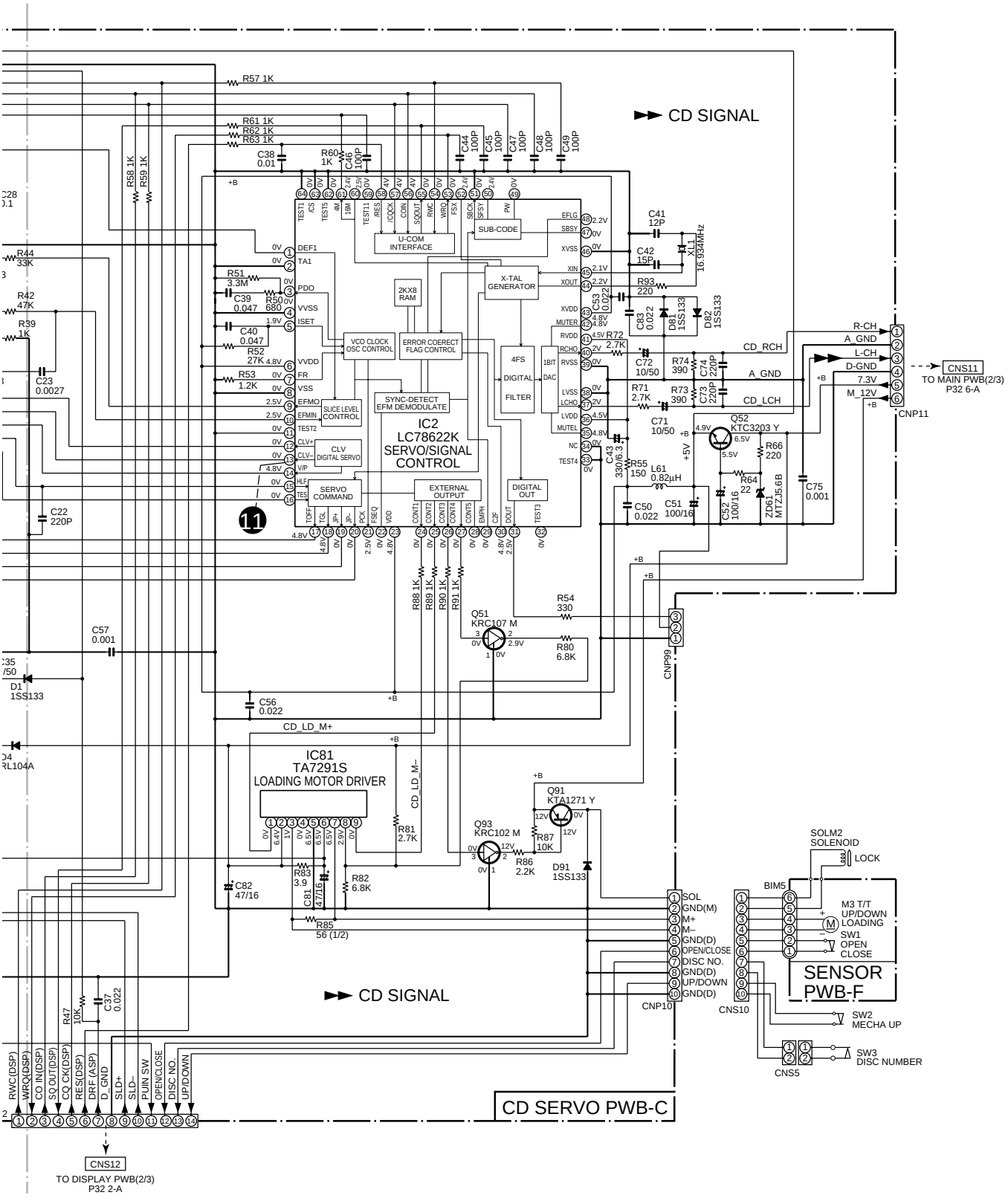


Figure 21 BLOCK DIAGRAM (3/3)



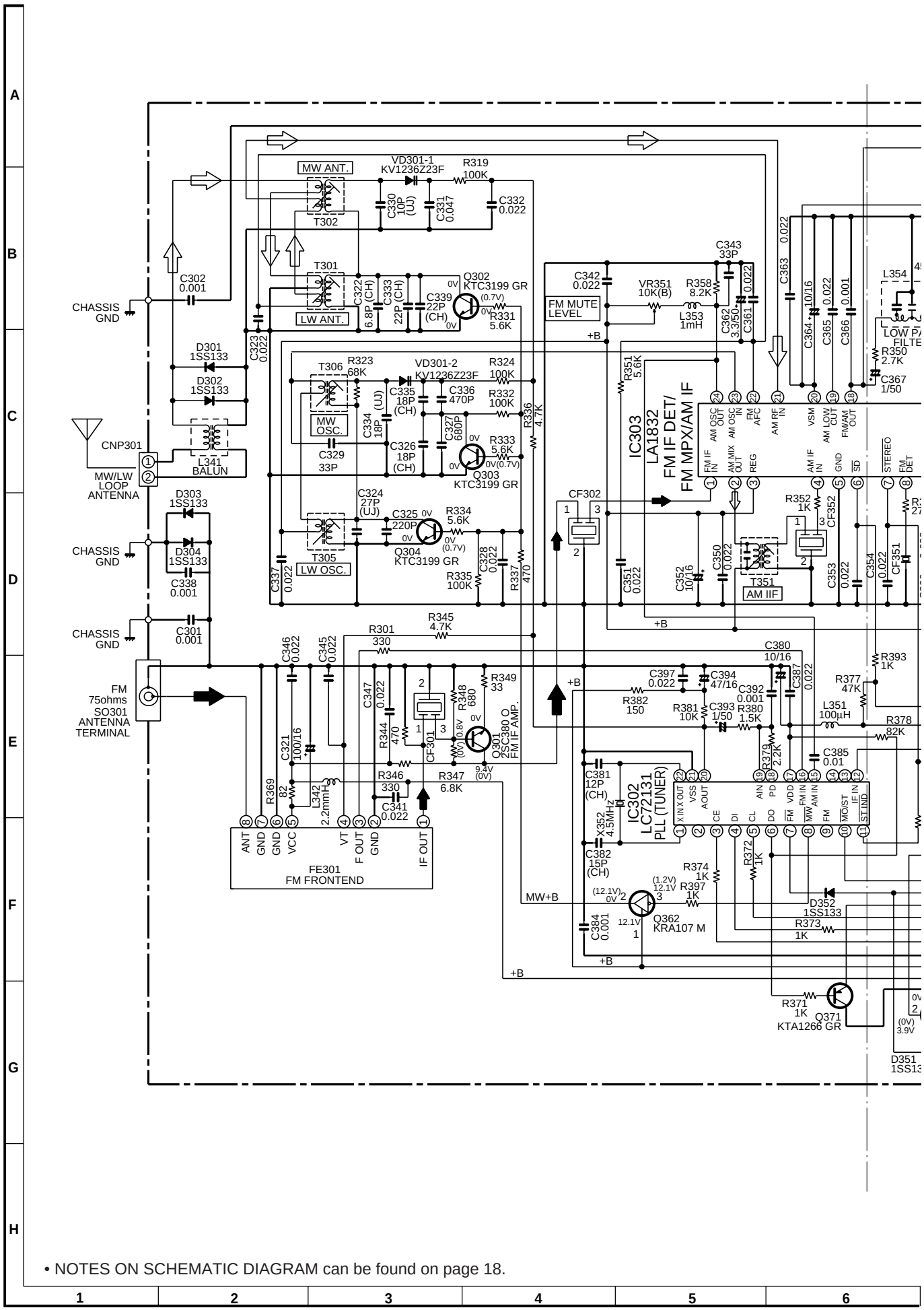
- The numbers ❶ to ⓬ are waveform numbers shown in page 44.
- NOTES ON SCHEMATIC DIAGRAM can be found on page 18.

Figure 22 SCHEMATIC DIAGRAM (1/14)



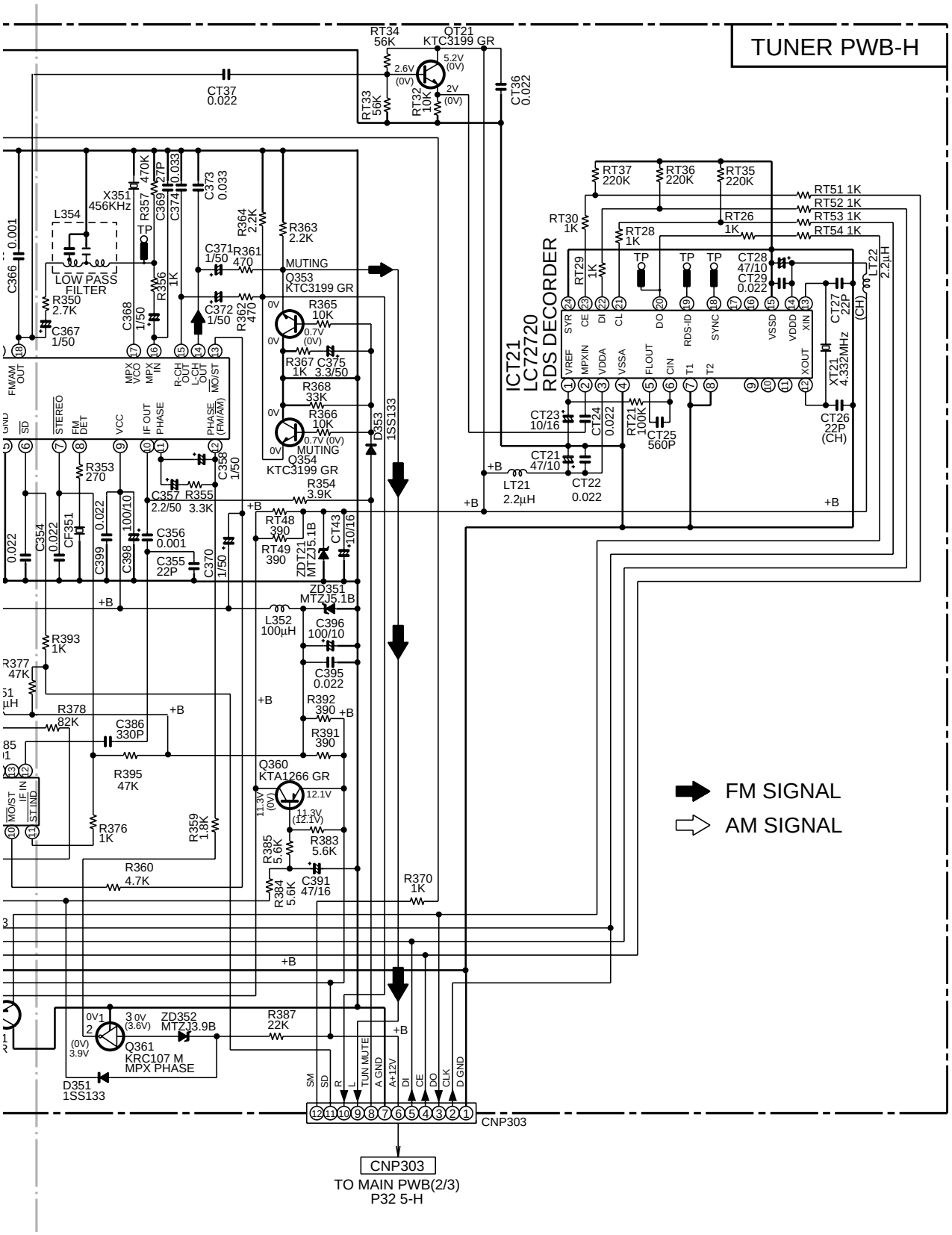
7	8	9	10	11	12

Figure 23 SCHEMATIC DIAGRAM (2/14)



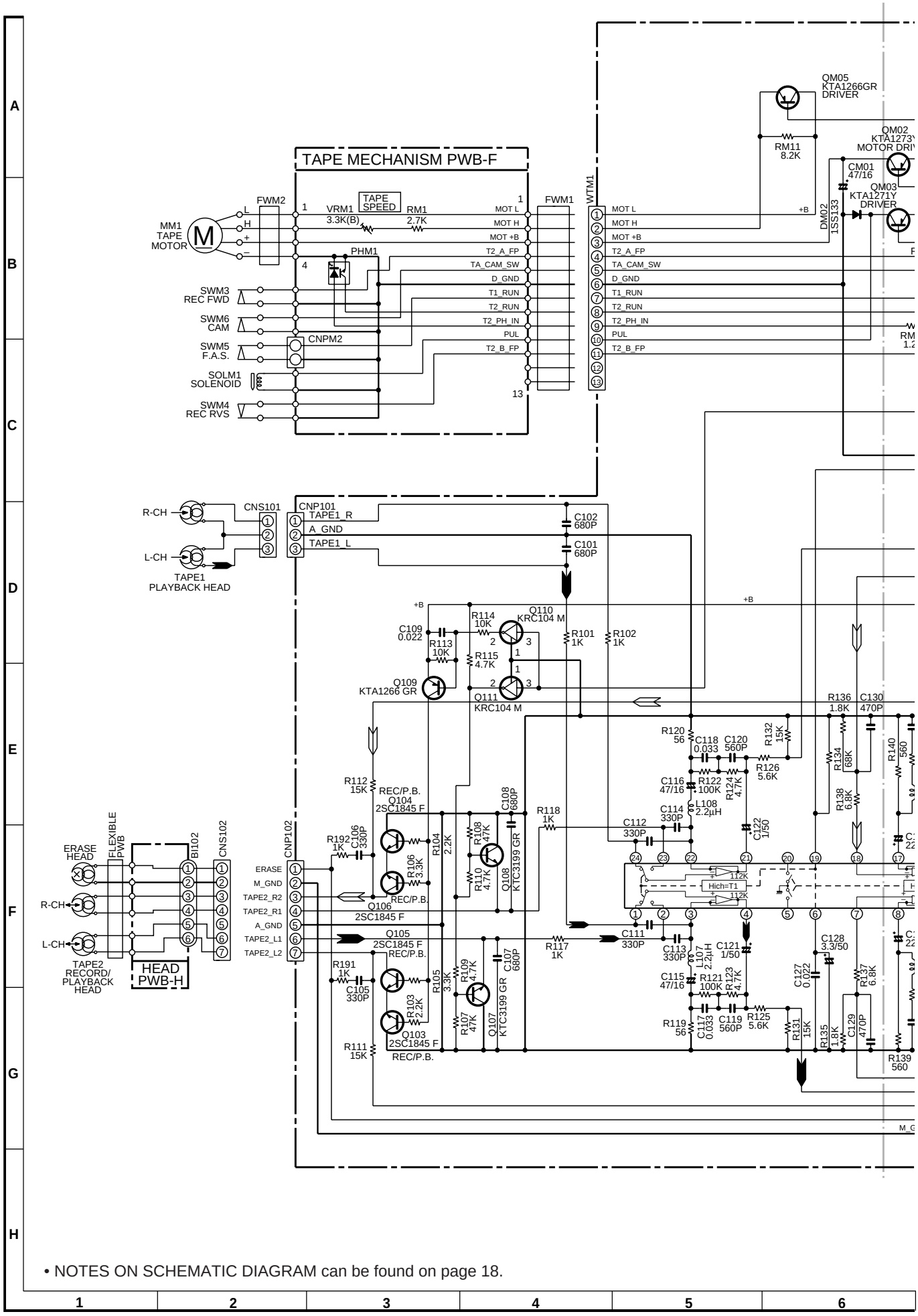
• NOTES ON SCHEMATIC DIAGRAM can be found on page 18.

Figure 24 SCHEMATIC DIAGRAM (3/14)



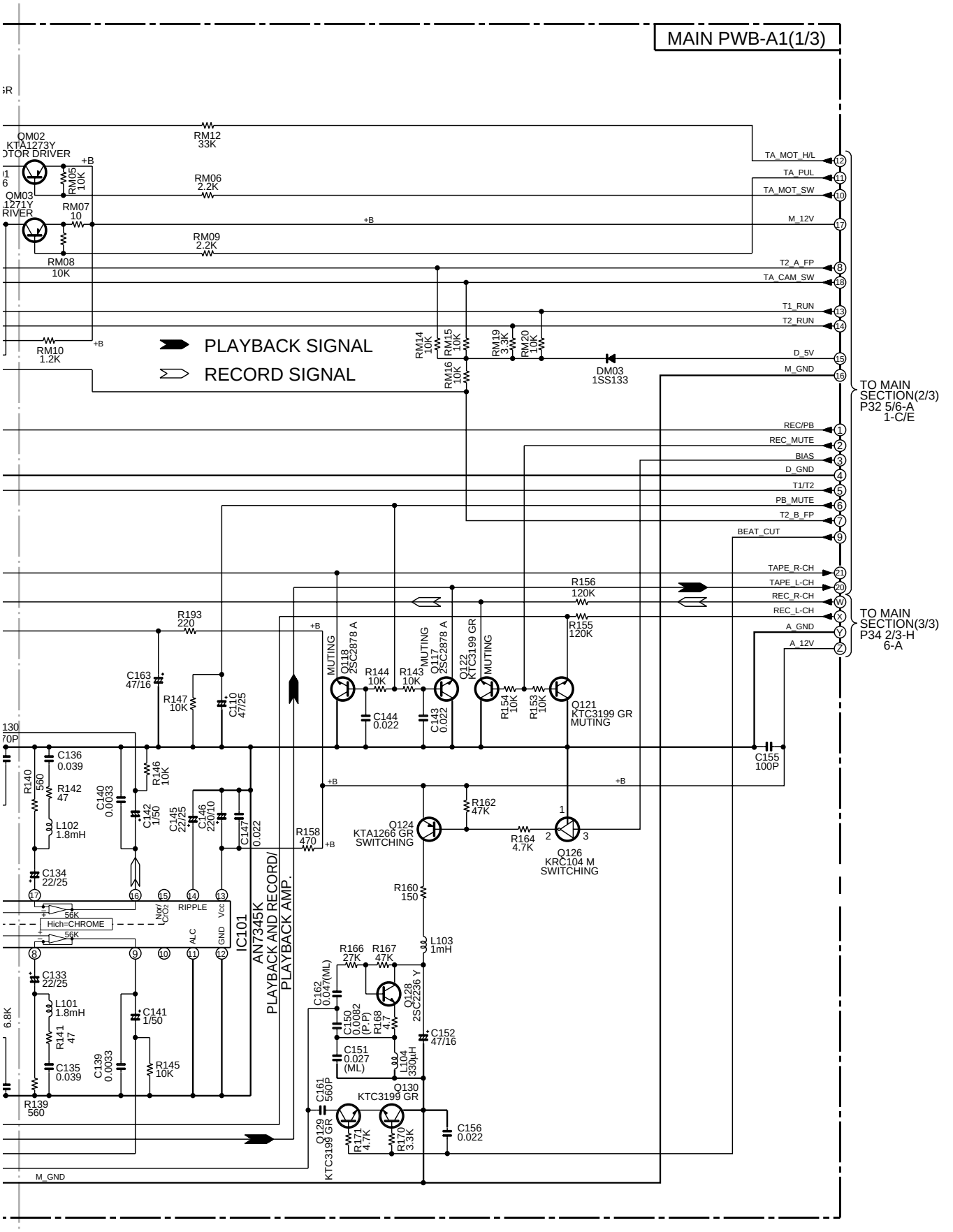
7	8	9	10	11	12

Figure 25 SCHEMATIC DIAGRAM (4/14)



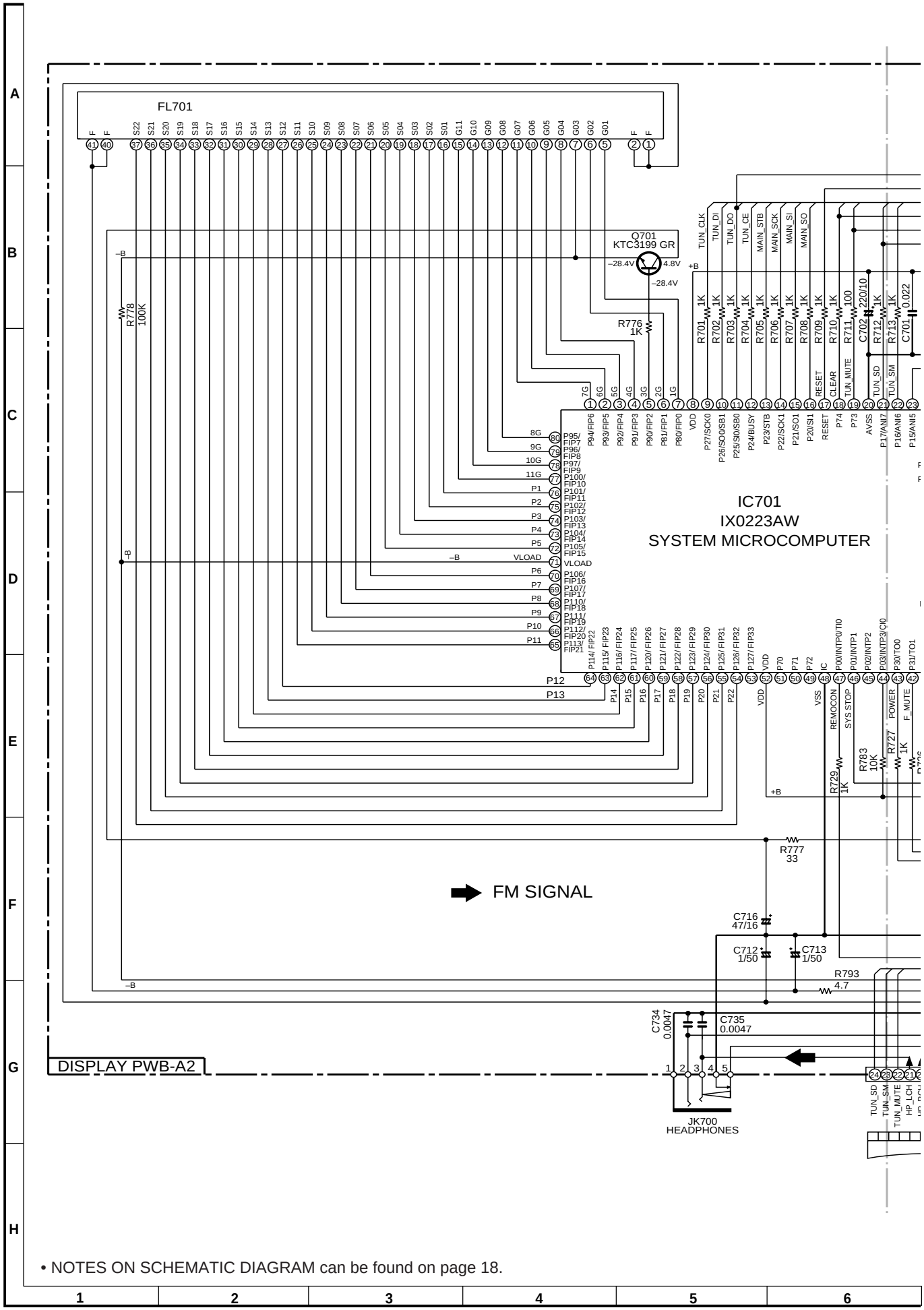
• NOTES ON SCHEMATIC DIAGRAM can be found on page 18.

Figure 26 SCHEMATIC DIAGRAM (5/14)



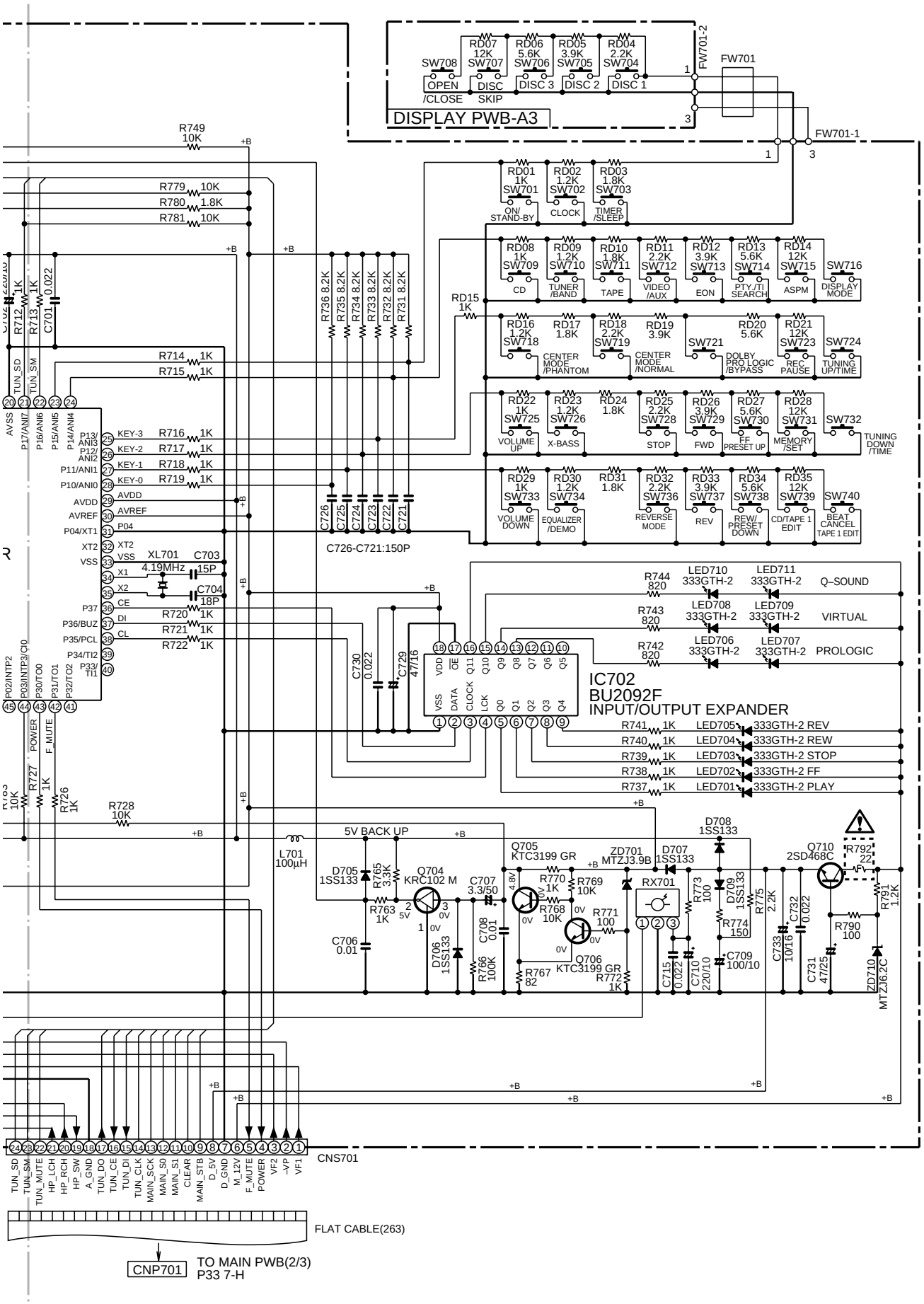
7	8	9	10	11	12

Figure 27 SCHEMATIC DIAGRAM (6/14)



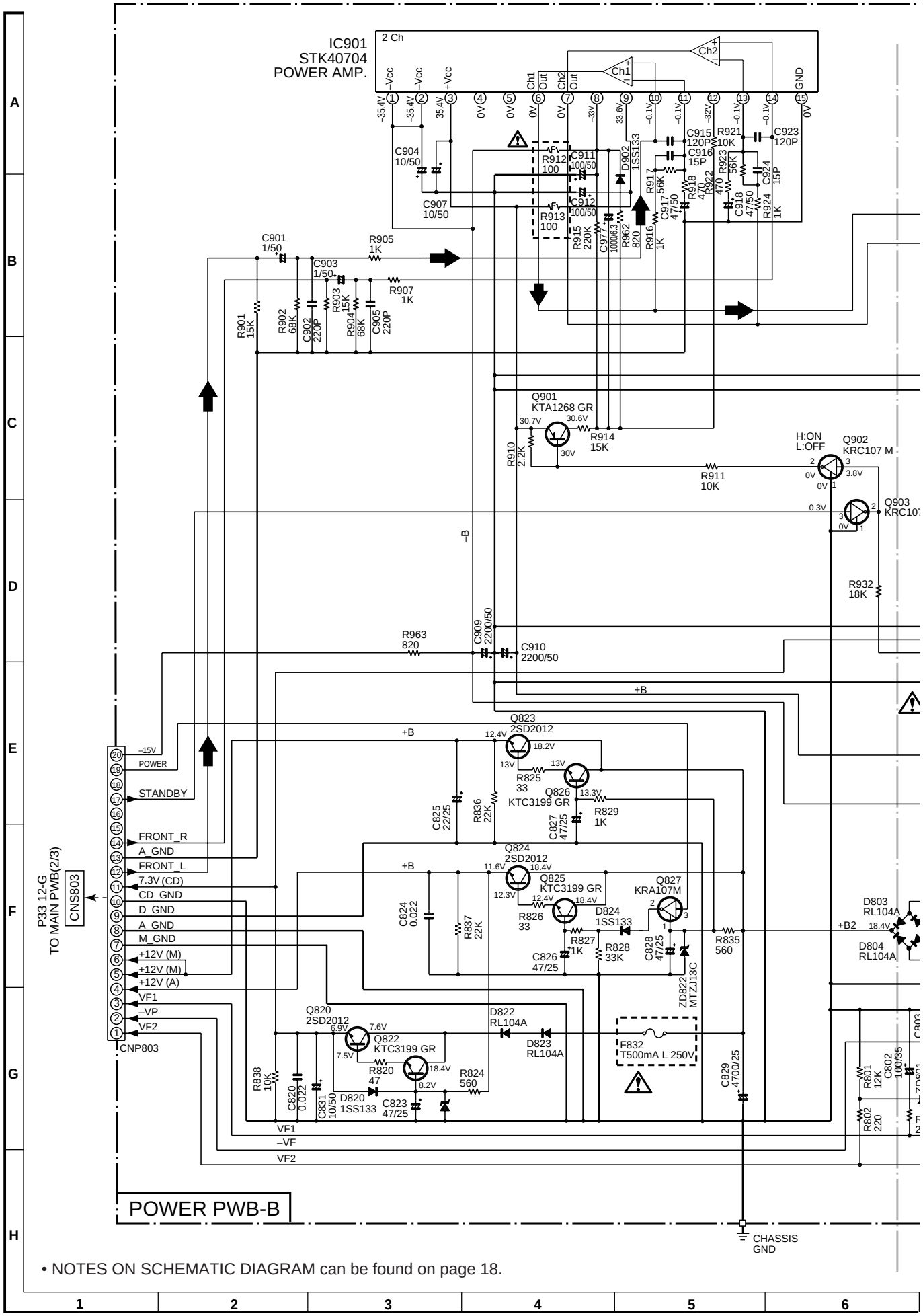
• NOTES ON SCHEMATIC DIAGRAM can be found on page 18.

Figure 28 SCHEMATIC DIAGRAM (7/14)



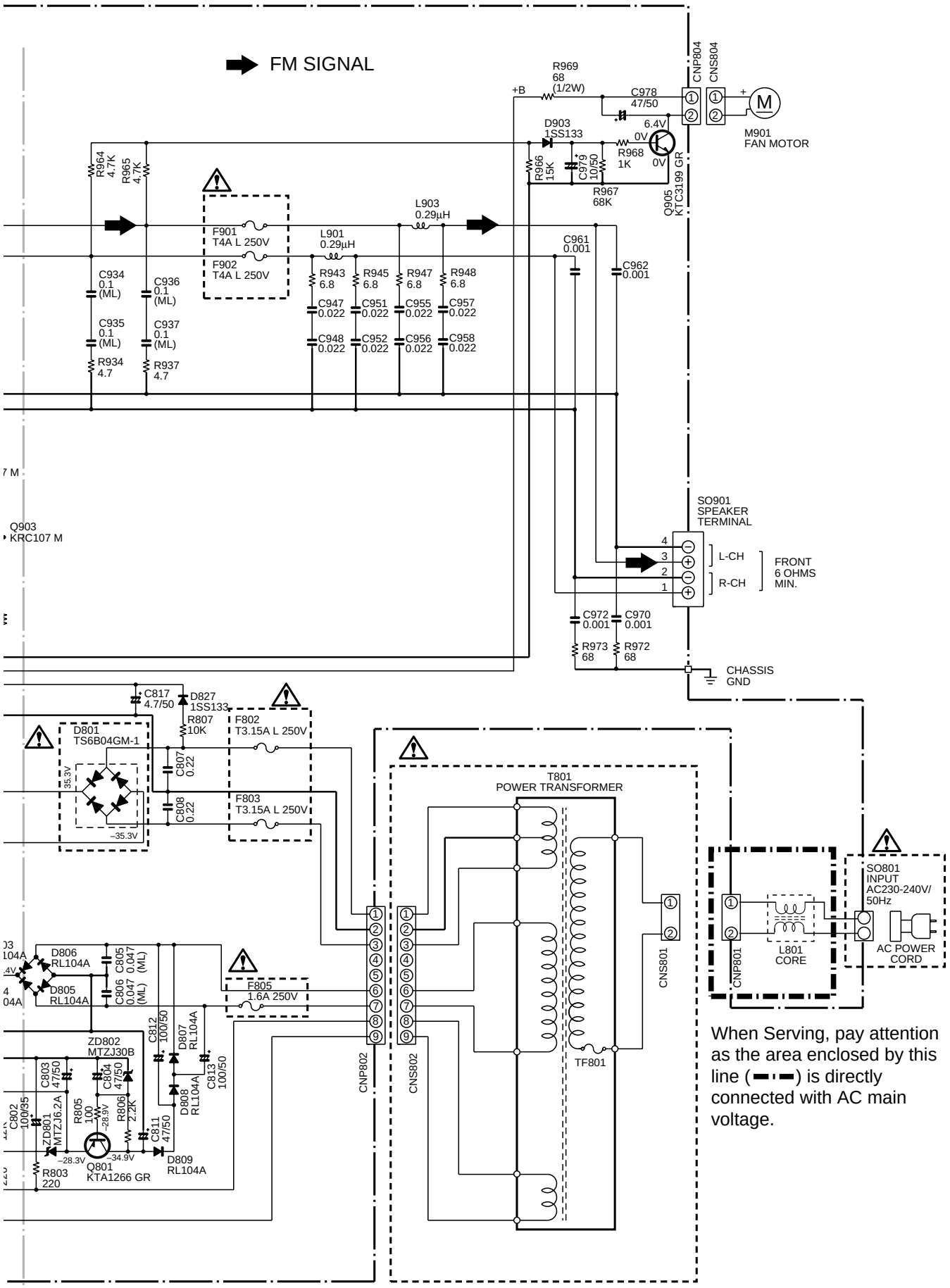
7	8	9	10	11	12

Figure 29 SCHEMATIC DIAGRAM (8/14)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 18.

Figure 30 SCHEMATIC DIAGRAM (9/14)



When Serving, pay attention as the area enclosed by this line (▬ ▪ ▬) is directly connected with AC main voltage.

7	8	9	10	11	12

Figure 31 SCHEMATIC DIAGRAM (10/14)

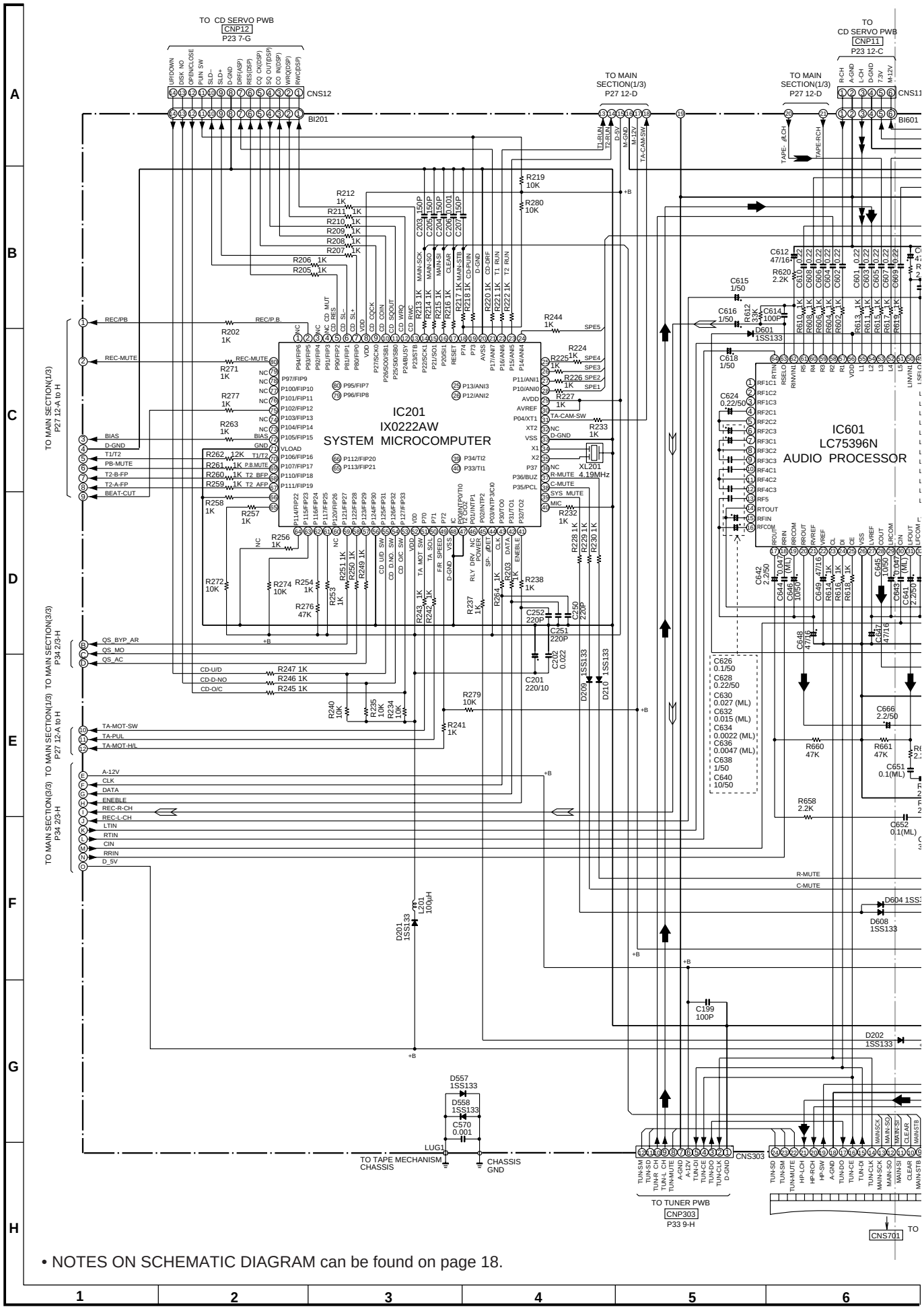
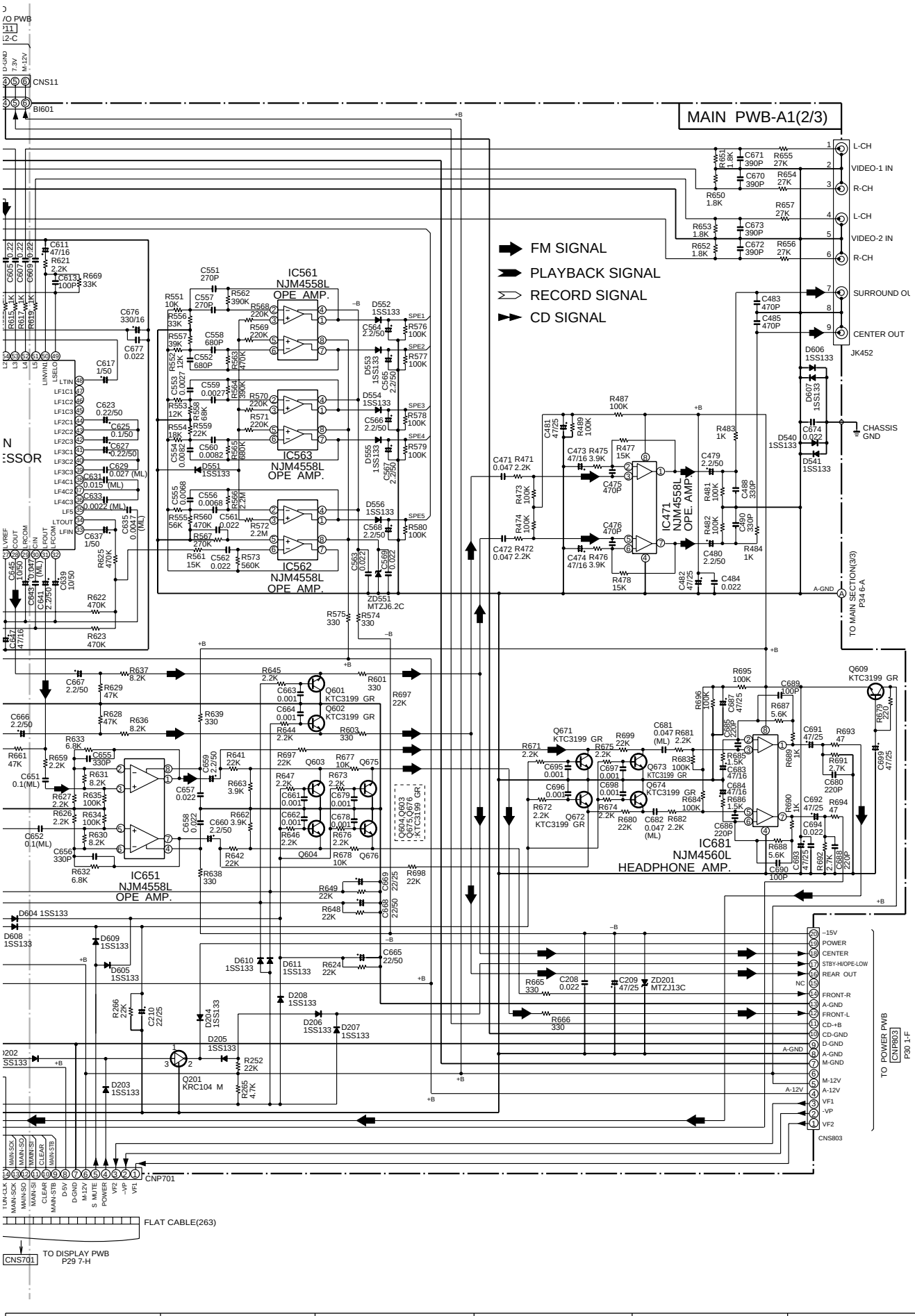
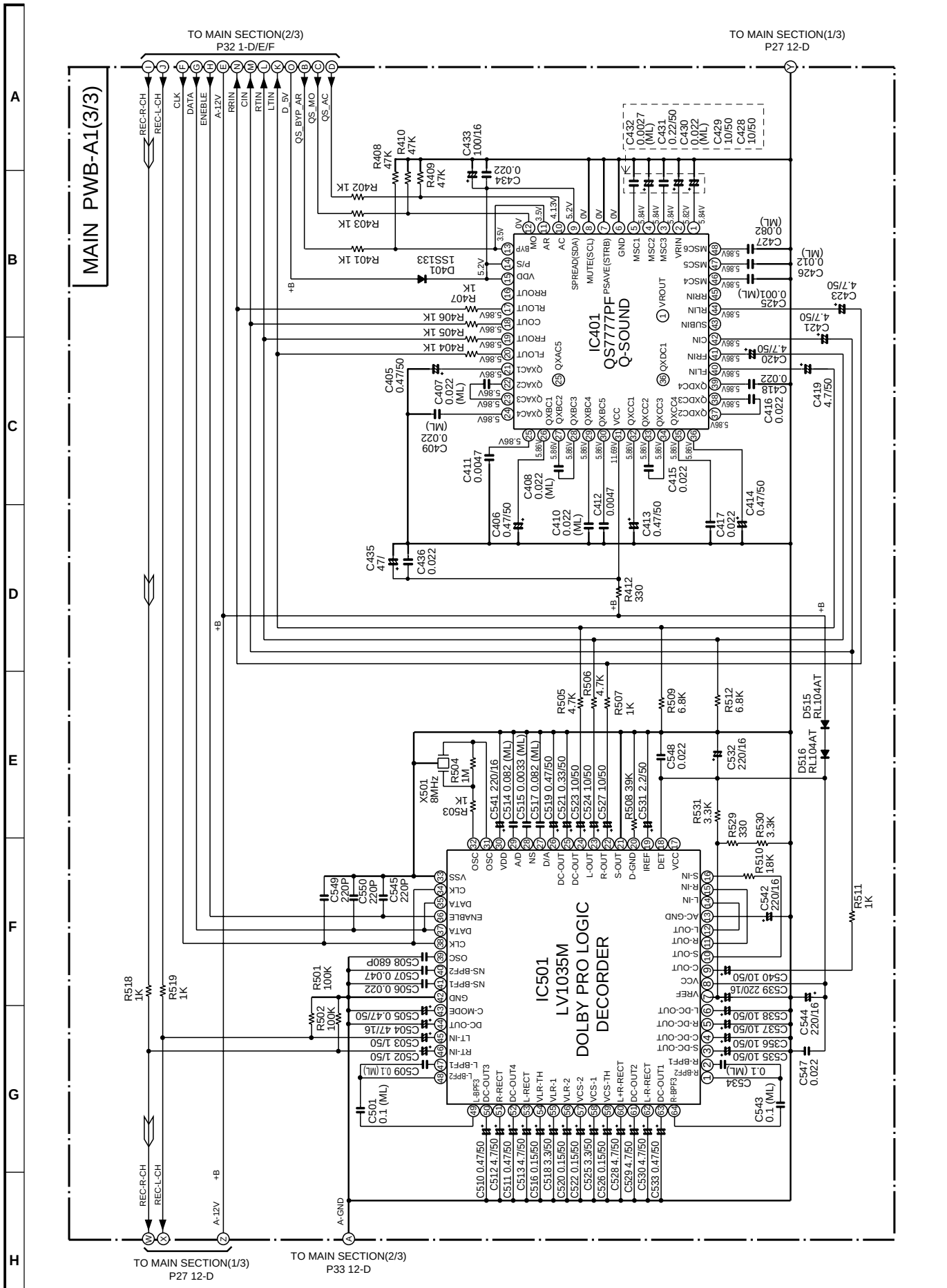


Figure 32 SCHEMATIC DIAGRAM (11/14)



7	8	9	10	11	12

Figure 33 SCHEMATIC DIAGRAM (12/14)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 18.

Figure 34 SCHEMATIC DIAGRAM (13/14)

IC1

PIN NO.	VOLTAGE
1	2.4V
2	2.4V
3	2.5V
4	2.5V
5	2.4V
6	2.5V
7	2.5V
8	2.5V
9	2.5V
10	2.4V
11	2.5V
12	2.5V
13	2.5V
14	2.5V
15	2.5V
16	2.5V
17	2.5V
18	2.5V
19	2.5V
20	2.4V
21	2.5V
22	0V
23	2.5V
24	2.5V
25	2.5V
26	2.5V
27	2.5V
28	2.5V
29	2.5V
30	2.2V
31	2.2V
32	0V
33	0V
34	4.8V
35	4.8V
36	0V
37	0V
38	4.8V
39	0V
40	0V
41	1.5V
42	2.4V
43	2.5V
44	2.4V
45	0V
46	2.5V
47	2.5V
48	0V
49	0V
50	2.4V
51	4V
52	4V
53	0V
54	0V
55	4.8V
56	4.8V
57	2.5V
58	2.5V
59	1V
60	1V
61	2.2V
62	4.2V
63	0V
64	4.8V

IC2

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	1.9V
6	4.8V
7	0V
8	0V
9	2.5V
10	2.5V
11	0V
12	0V
13	0V
14	4.8V
15	0V
16	0V
17	4.8V
18	4.8V
19	0V
20	0V
21	2.5V
22	0V
23	4.8V
24	0V
25	0V
26	0V
27	0V
28	0V
29	0V
30	4.8V
31	2.5V
32	0V
33	0V
34	0V
35	4.8V
36	4.5V
37	2V
38	0V
39	0V
40	2V
41	4.5V
42	4.8V
43	4.8V
44	2.2V
45	2.1V
46	0V
47	0V
48	2.2V
49	0V
50	2.4V
51	0V
52	2.4V
53	0V
54	0V
55	0V
56	4V
57	4V
58	4V
59	0V
60	2.5V
61	2.4V
62	0V
63	0V
64	0V

IC3

PIN NO.	VOLTAGE
1	2.5V
2	2.5V
3	0V
4	2.5V
5	2.5V
6	2V
7	2V
8	0V
9	0V
10	0V
11	0V
12	2V
13	2V
14	2.5V
15	2.5V
16	0V
17	4.7V
18	0V
19	0.7V
20	4.7V
21	2.5V
22	2.5V
23	2.5V
24	2V
25	2V
26	0V
27	0V
28	0V
29	0V
30	1.8V
31	1.8V
32	2.5V
33	2.5V
34	0V
35	0V
36	0V

IC81

PIN NO.	VOLTAGE
1	0V
2	6.4V
3	1V
4	0V
5	6.5V
6	6.5V
7	6.5V
8	2.9V
9	0V

IC201

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	41	4.9V
2	4.9V	42	4.9V
3	0V	43	5.4V
4	4.9V	44	4.9V
5	4.9V	45	4.9V
6	0V	46	4.9V
7	0V	47	4.8V
8	4.9V	48	0V
9	4.9V	49	0V
10	4.9V	50	12.3V
11	0V	51	12.3V
12	0V	52	4.9V
13	0V	53	0V
14	4.8V	54	4.9V
15	0V	55	0V
16	0V	56	5.2V
17	4.8V	57	0V
18	3.5V	58	0V
19	0V	59	0V
20	0V	60	0V
21	0V	61	4.9V
22	5.2V	62	4.9V
23	5.2V	63	4.9V
24	0V	64	4.9V
25	0V	65	4.9V
26	0V	66	4.9V
27	0V	67	5.2V
28	0V	68	5.2V
29	4.9V	69	4.8V
30	4.9V	70	4.9V
31	5.2V	71	0V
32	0V	72	0V
33	0V	73	0V
34	2.3V	74	0V
35	2.3V	75	0V
36	4.9V	76	4.9V
37	4.9V	77	0V
38	4.9V	78	0V
39	4.9V	79	0V
40	0V	80	4.9V

IC401

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	5.84V	25	5.86V
2	5.82V	26	5.86V
3	5.84V	27	5.86V
4	5.84V	28	5.86V
5	5.84V	29	5.86V
6	0V	30	5.86V
7	0V	31	11.69V
8	0V	32	5.86V
9	5.20V	33	5.86V
10	4.13V	34	5.86V
11	3.50V	35	5.86V
12	0V	36	5.86V
13	3.50V	37	5.86V
14	5.20V	38	5.86V
15	5.20V	39	5.86V
16	5.87V	40	5.86V
17	5.86V	41	5.86V
18	5.86V	42	5.86V
19	5.86V	43	5.73V
20	5.86V	44	5.86V
21	5.86V	45	5.74V
22	5.86V	46	5.86V
23	5.86V	47	5.86V
24	5.86V	48	5.86V

IC501

PIN NO.	VOLTAGE
1	4.7V
2	4.7V
3	4.7V
4	4.7V
5	4.7V
6	4.7V
7	4.7V
8	9.4V
9	4.7V
10	4.7V
11	4.7V
12	4.7V
13	4.7V
14	4.7V
15	4.7V
16	4.7V
17	0V
18	9.4V
19	2.5V
20	0.6V
21	–0.1V
22	4.7V
23	4.7V
24	4.7V
25	4.7V
26	4.7V
27	4.7V
28	4.7V
29	4.7V
30	4.7V
31	5V
32	2.3V
33	–0.1V
34	4V
35	–0.1V
36	3.6V
37	–0.1V
38	4V
39	0V
40	4.7V
41	4.8V
42	0V
43	4.7V
44	4.7V
45	4.7V
46	4.7V
47	4.7V
48	4.7V
49	4.7V
50	4.7V
51	5.4V
52	4.7V
53	5.4V
54	4.6V
55	4.6V
56	4.6V
57	3.7V
58	3.5V
59	3.4V
60	5.4V
61	4.8V
62	5.4V
63	4.7V
64	4.7V

IC601

PIN NO.	VOLTAGE
1	5V
2	5V
3	4.9V
4	4.8V
5	5V
6	4.9V
7	4.8V
8	5V
9	4.8V
10	4.8V
11	5V
12	4.9V
13	4.8V
14	5V
15	4.9V
16	5V
17	5V
18	4.9V
19	5V
20	5V
21	5V
22	5V
23	4V
24	–0.1V
25	–0.1V
26	0V
27	5V
28	5V
29	5V
30	4.9V
31	5V
32	5V
33	4.9V
34	5V
35	4.8V
36	4.9V
37	5V
38	4.8V
39	4.9V
40	5V
41	4.8V
42	4.9V
43	5V
44	4.8V
45	4.9V
46	5V
47	5V
48	4.9V
49	5V
50	5V
51	5V
52	5V
53	5V
54	5V
55	5V
56	10V
57	5V
58	5V
59	5V
60	5V
61	5V
62	5V
63	5V
64	4.9V

IC701

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	–28.4V	41	0V
2	–28.4V	42	0V
3	–28.4V	43	4.9V
4	–28.4V	44	0V
5	–28.4V	45	0V
6	–28.4V	46	4.8V
7	–28.4V	47	4.7V
8	4.85V	48	0V
9	4.85V	49	0V
10	0V	50	0V
11	4.75V	51	0V
12	0V	52	4.9V
13	3.3V	53	4.9V
14	4.7V	54	–22V
15	0V	55	–28.2V
16	0V	56	–18.9V
17	5.0V	57	–31.3V
18	4.8V	58	–31.3V
19	4.8V	59	–31.3V
20	0V	60	–25.1V
21	4.8V	61	–15.9V
22	4.8V	62	–22.2V
23	4.8V	63	–22.2V
24	4.8V	64	–18.9V
25	4.8V	65	–13.0V
26	4.8V	66	–31.3V
27	4.8V	67	–28.2V
28	3.1V	68	–31.3V
29	4.9V	69	–19.0V
30	4.8V	70	–31.3V
31	0V	71	–31.4V
32	4.8V	72	–31.3V
33	0V	73	–31.3V
34	2.3V	74	–31.3V
35	2.1V	75	–31.3V
36	0V	76	–22.1V
37	0V	77	–28.4V
38	0V	78	–28.4V
39	0V	79	–28.4V
40	0V	80	–28.4V

IC702

PIN NO.	VOLTAGE
1	0V
2	1.0V
3	1.0V
4	1.0V
5	0V
6	1.8V
7	1.8V
8	1.8V
9	10.6V
10	9.1V
11	1.8V
12	9.1V
13	1.8V
14	9.4V
15	9.3V
16	10.8V
17	0V
18	4.8V

IC561

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	–11.7V
5	0V
6	0V
7	0V
8	6.4V

IC562

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	–11.7V
5	0V
6	0V
7	0V
8	6.4V

IC563

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	–11.7V
5	0V
6	0V
7	0V
8	6.4V

IC651

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	–13.2V
5	0V
6	0V
7	0V
8	11.0V

IC681

PIN NO.	VOLTAGE
1	5.6V
2	5.6V
3	5.6V
4	0V
5	5.5V
6	5.6V
7	5.6V
8	11.1V

IC901

PIN NO.	VOLTAGE
1	–35.4V
2	–35.4V
3	35.4V
4	0V
5	0V
6	0V
7	0V
8	–33V
9	33.6V
10	–0.1V
11	–0.1V
12	–32V
13	–0.1V
14	–0.1V
15	0V

( ):AM
OTHER:FM(ST)

IC302

PIN NO.	VOLTAGE
1	2.6V
2	0V
3	0V
4	0V
5	4.8V
6	0.5V(5V)
7	0.3V(12.3V)
8	12V(0V)
9	0.4V(0V)
10	4V(0V)
11	5.1V(5.1V)
12	0V
13	0V
14	0V
15	0V(2.5V)
16	2.5V(0V)
17	5.1V
18	0.9V
19	0.9V
20	1.9V(1.1V)
21	0V
22	2.6V

IC303

PIN NO.	VOLTAGE
1	2.2V
2	5.1V
3	2.2V
4	2.2V
5	0V
6	5.0V
7	5.1V
8	2.9V(3.6V)
9	5.1V
10	3.5V(0.3V)
11	3.9V(1.9V)
12	3.9V(1.2V)
13	4.0V
14	1.4V
15	1.4V
16	2.2V
17	2.4V(0V)
18	2.4V(0.9V)
19	0V(1.9V)
20	0.9V(0.9V)
21	2.5V(2.1V)
22	2.5V(2.1V)
23	5.1V(5.1V)
24	3.6V(3.6V)

ICT21

PIN NO.	VOLTAGE
1	2.6V(0.2V)
2	2.6V(0V)
3	5.2V(0V)
4	0V(0V)
5	2.6V(0V)
6	2.6V(0V)
7	0V(0V)
8	0V(0V)
9	0V
10	0V
11	0V
12	2.6V(0V)
13	2.7V(0V)
14	5.2V(0V)
15	0V(0V)
16	0V
17	0V
18	0V
19	0V(0.6V)
20	0V(5V)
21	4.8V(4.8V)
22	0V(0V)
23	0V(0V)
24	0V(0V)

( ):CD NORMAL REC
OTHER:CD NORMAL PLAY

IC101

PIN NO.	VOLTAGE
1	0V
2	0V
3	0.6V
4	2.8V
5	0V
6	0V(1.3V)
7	0V
8	0.6V
9	2.8V
10	2.8V
11	0V
12	0V
13	5.8V
14	3.6V
15	0V
16	2.8V
17	0.6V
18	0V
19	0V
20	0V
21	2.8V
22	0.6V
23	0V
24	0V

7	8	9	10	11	12

Figure 35 SCHEMATIC DIAGRAM (14/14)

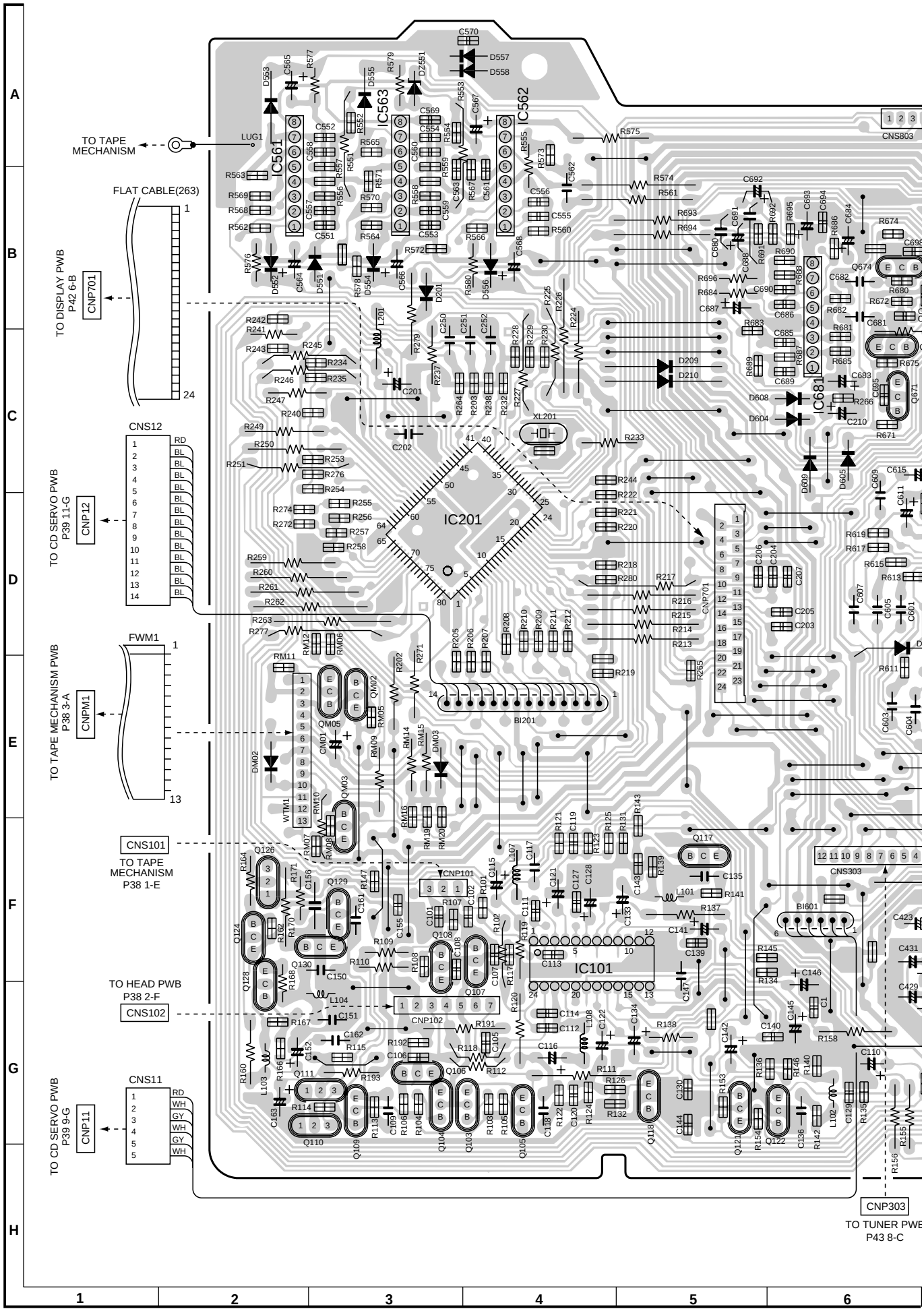
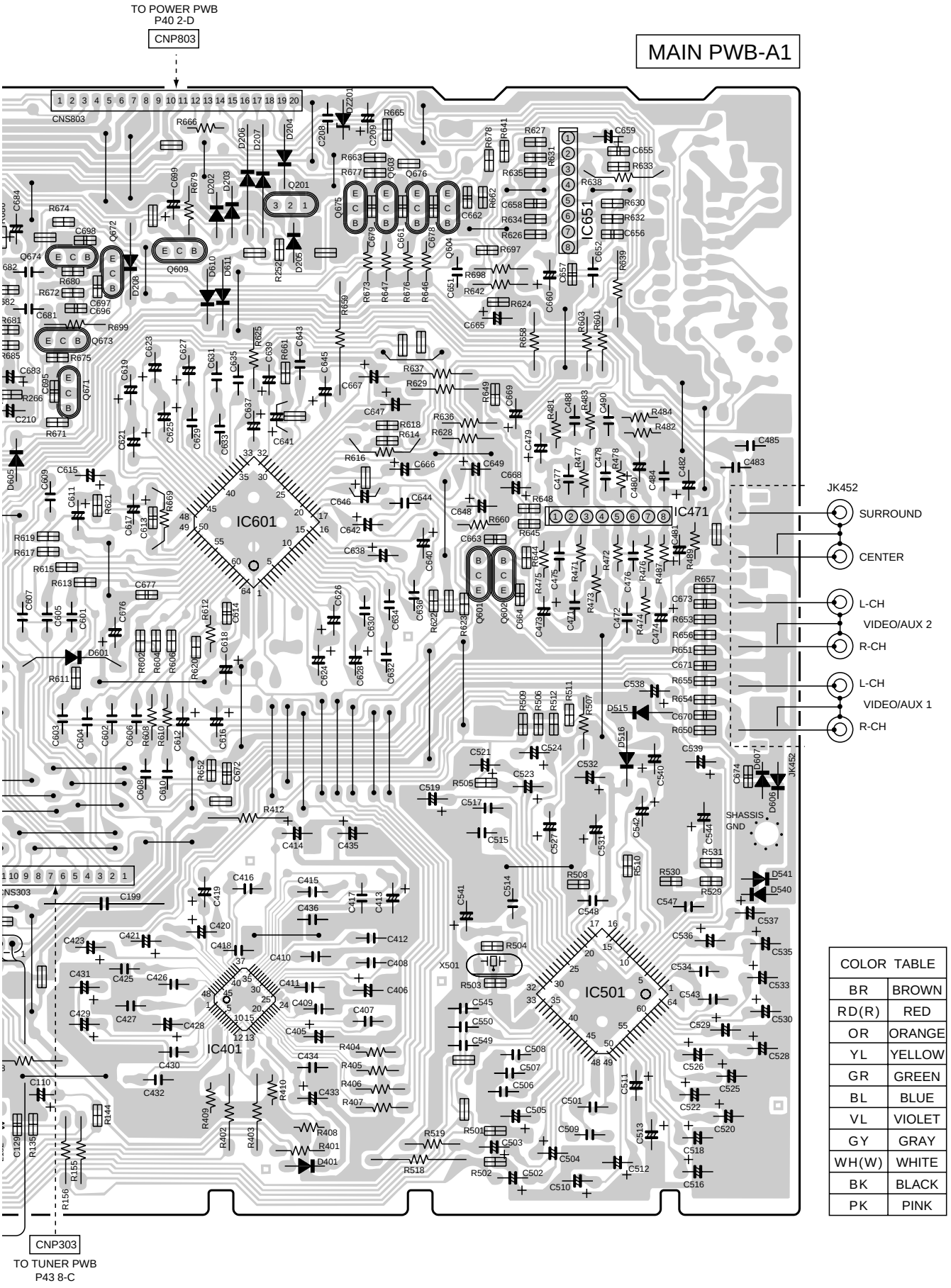


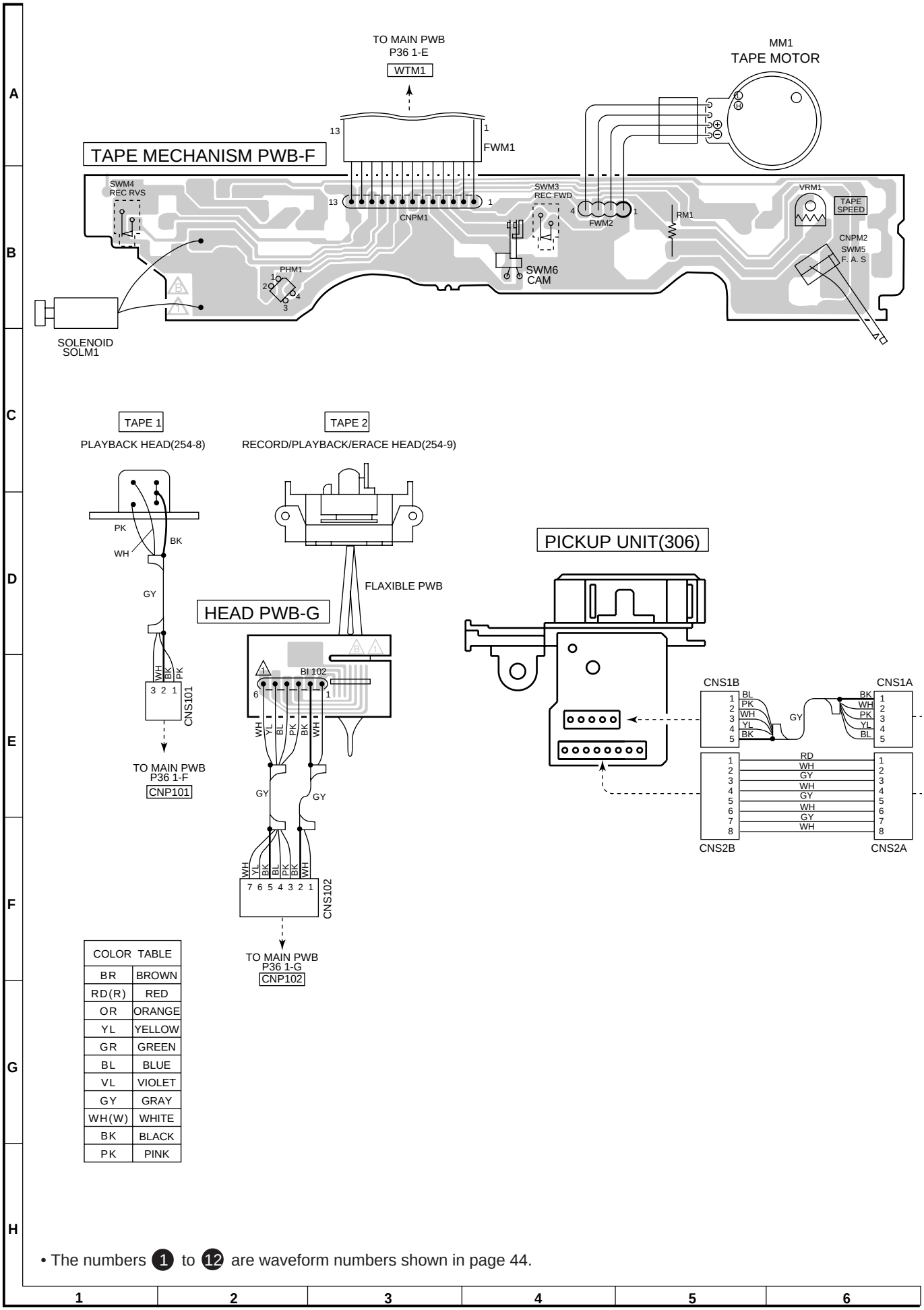
Figure 36 WIRING SIDE OF P.W.BOARD (1/8)



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

7	8	9	10	11	12

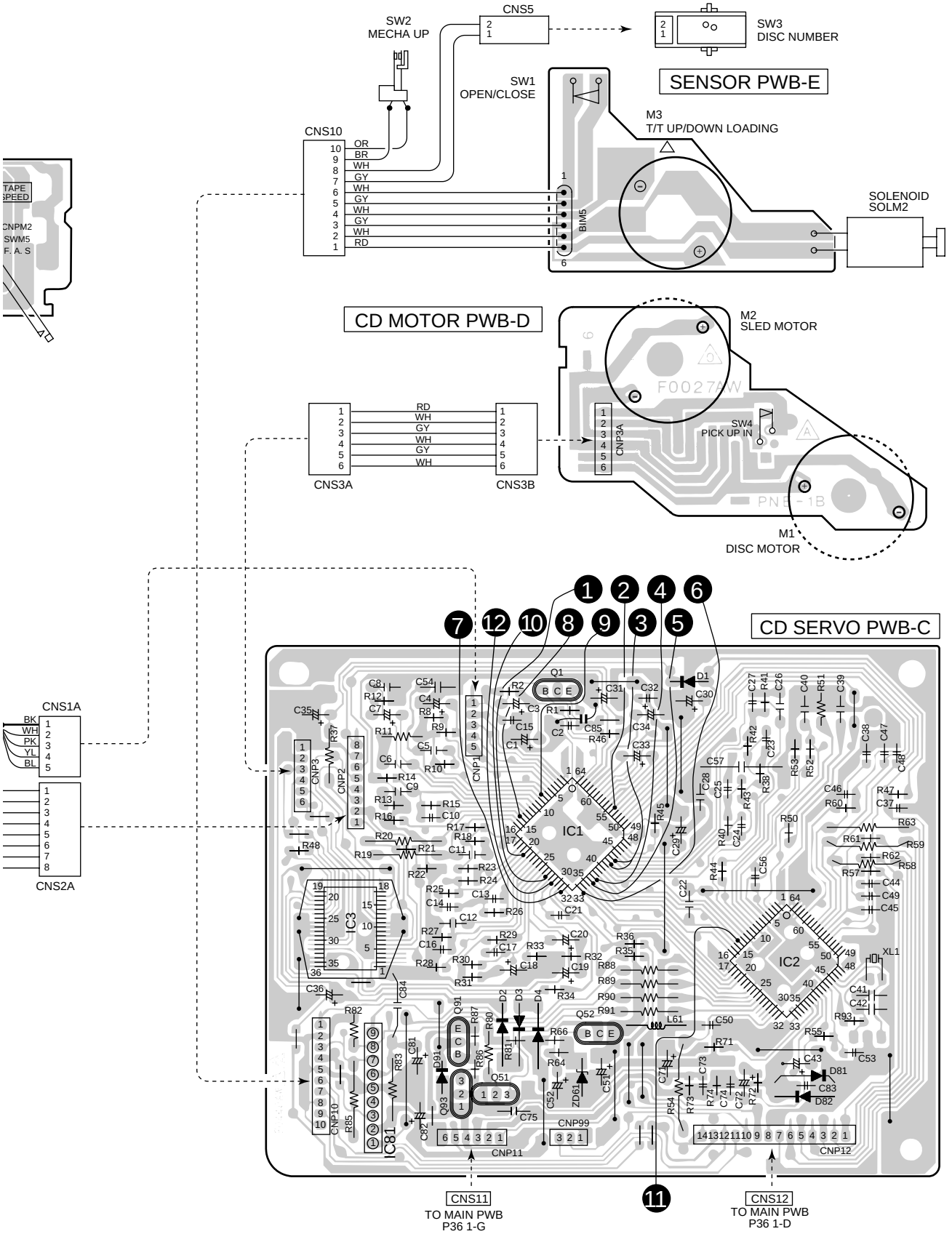
Figure 37 WIRING SIDE OF P.W.BOARD (2/8)



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

• The numbers ❶ to ⓬ are waveform numbers shown in page 44.

Figure 38 WIRING SIDE OF P.W.BOARD (3/8)



7	8	9	10	11	12

Figure 39 WIRING SIDE OF P.W.BOARD (4/8)

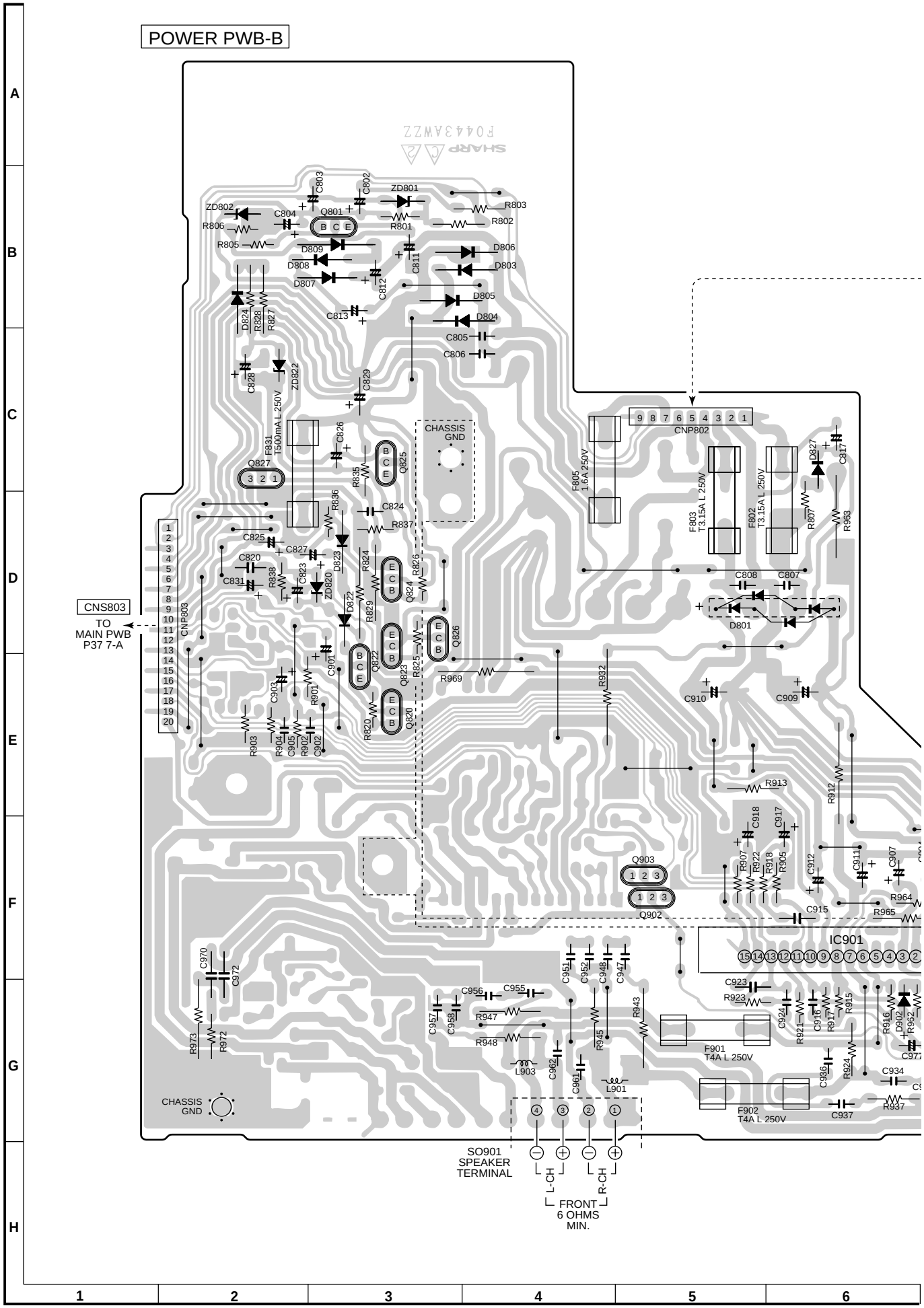
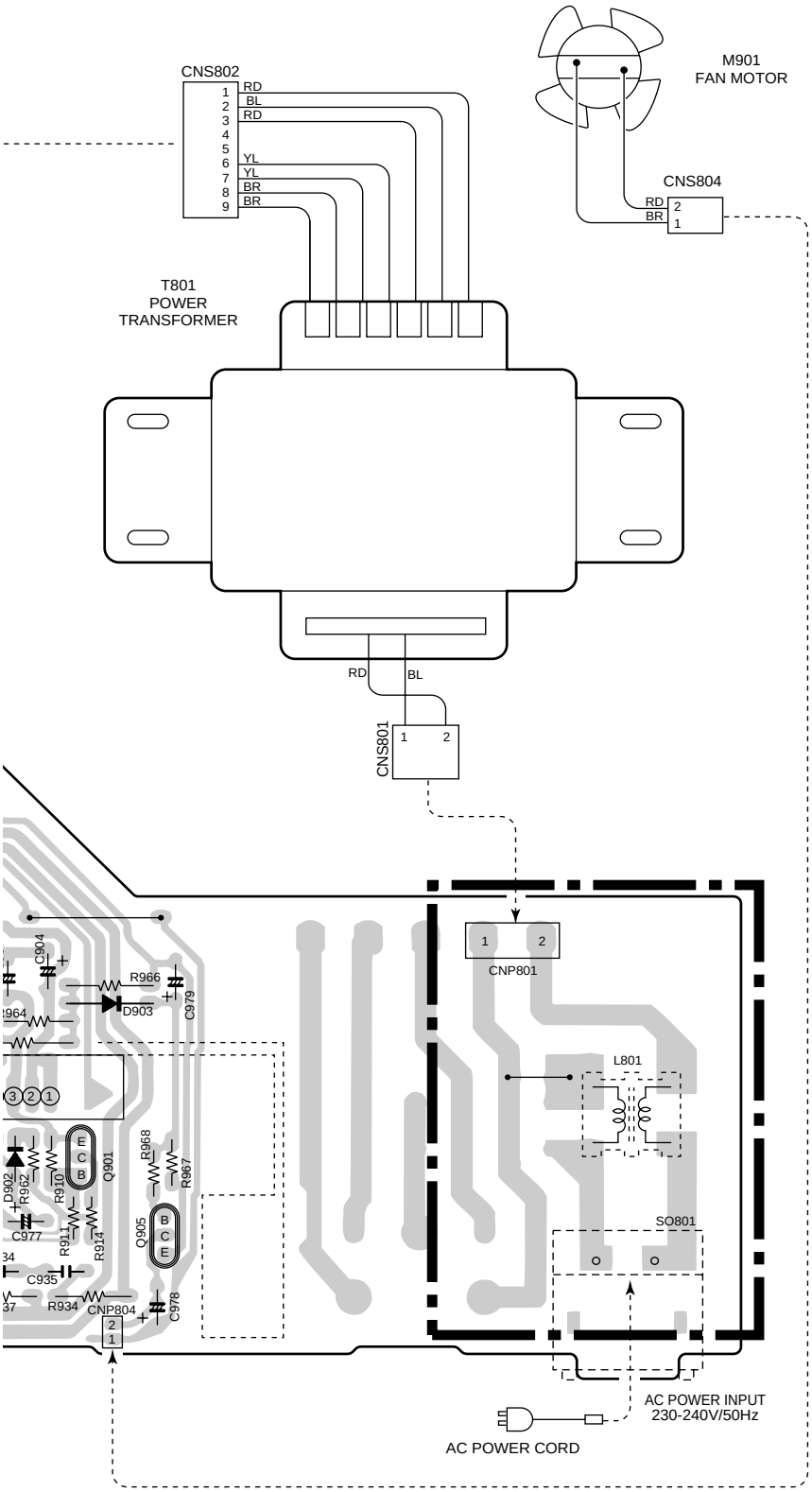


Figure 40 WIRING SIDE OF P.W.BOARD (5/8)



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

When Serving, pay attention as the area enclosed by this line (▬·▬) is directly connected with AC main voltage.

7	8	9	10	11	12

Figure 41 WIRING SIDE OF P.W.BOARD (6/8)

COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

DISPLAY PWB-A2

SWITCH PWB-A3

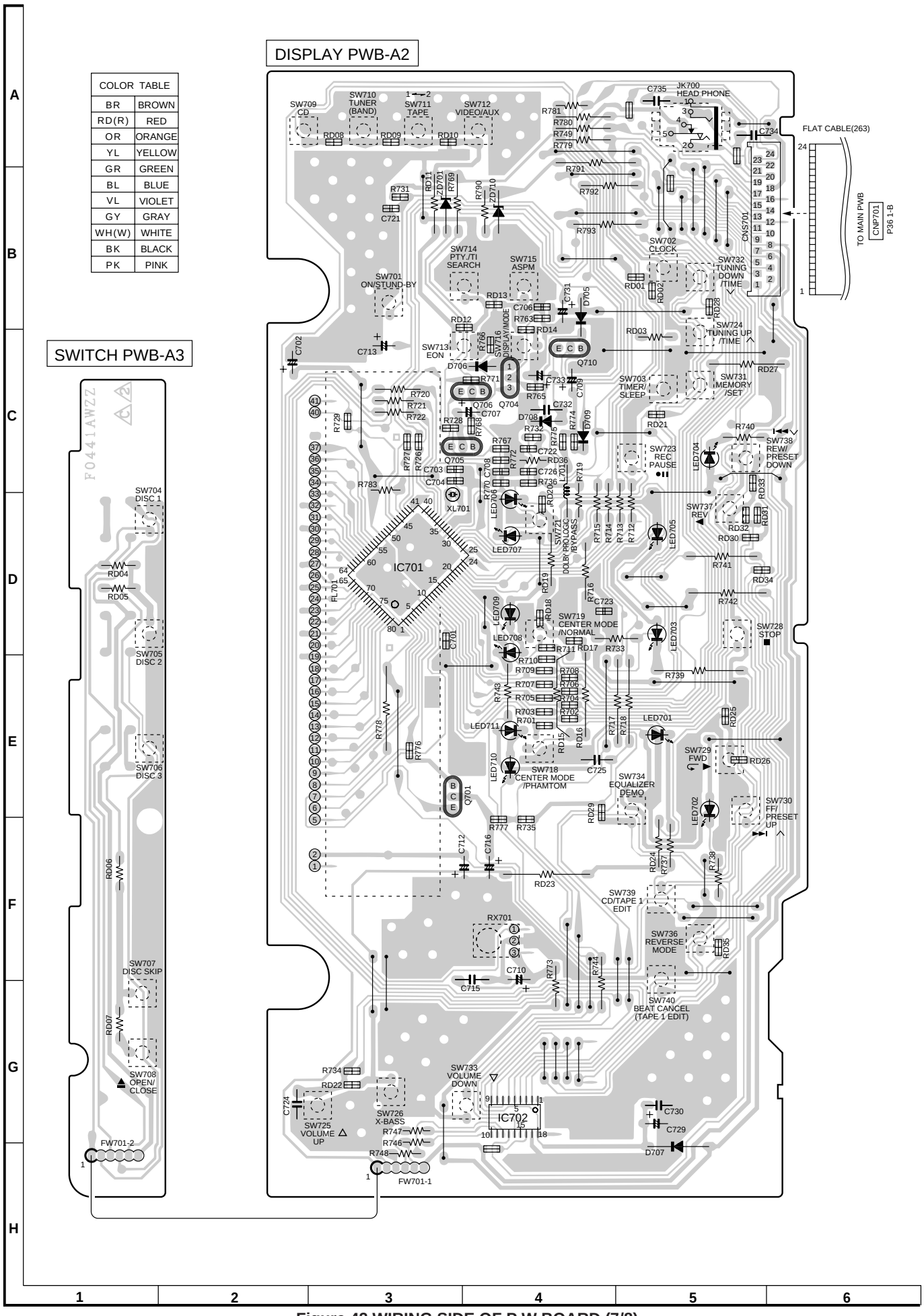
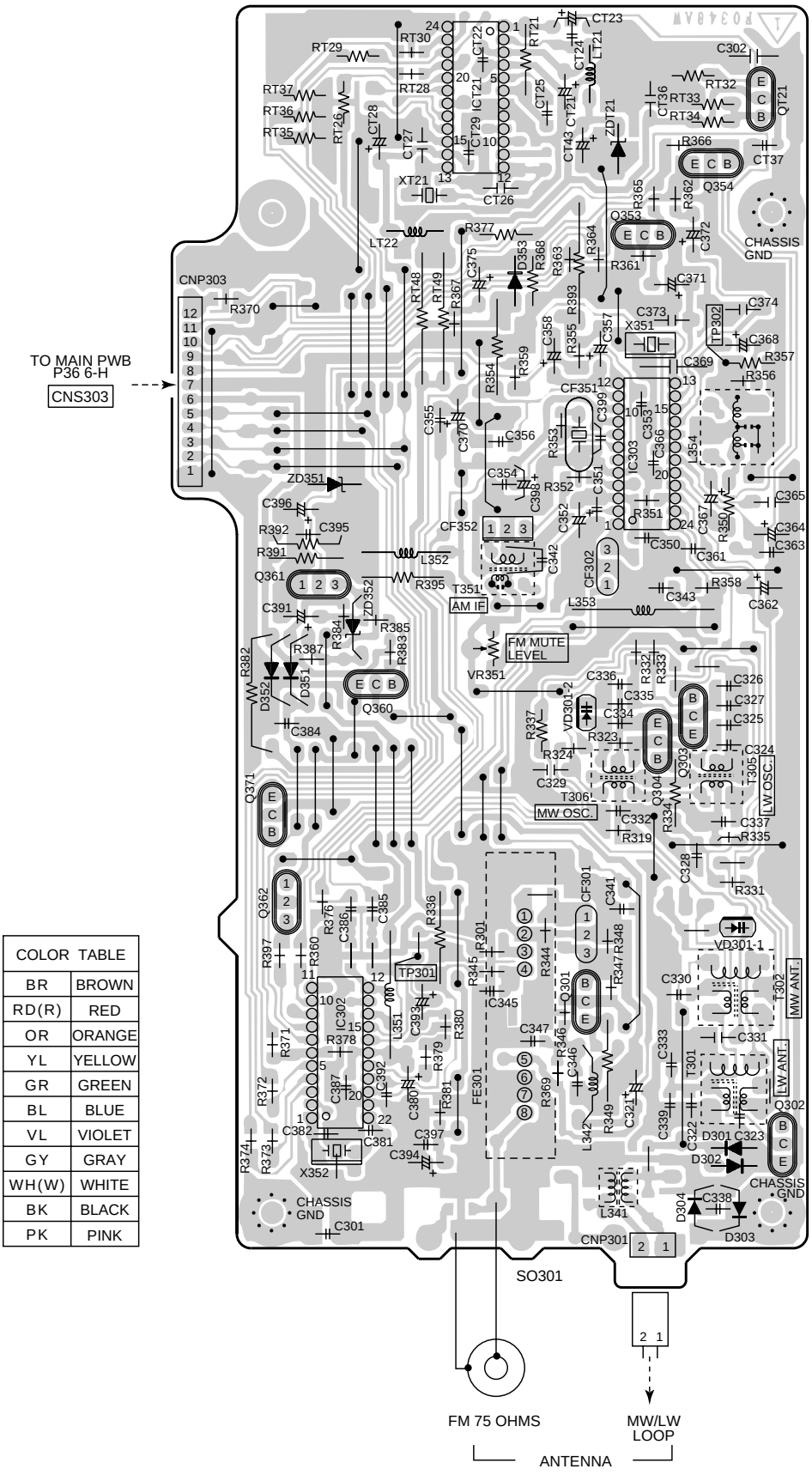


Figure 42 WIRING SIDE OF P.W.BOARD (7/8)

TUNER PWB-H



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

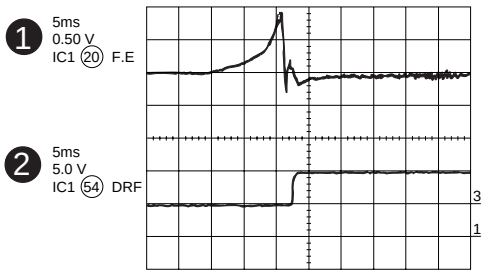
7	8	9	10	11	12

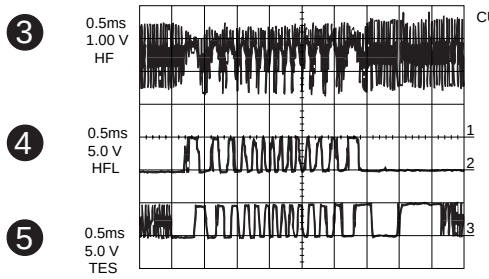
Figure 43 WIRING SIDE OF P.W.BOARD (8/8)

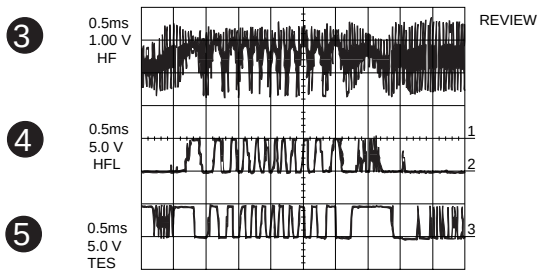
WAVEFORMS OF CD CIRCUIT

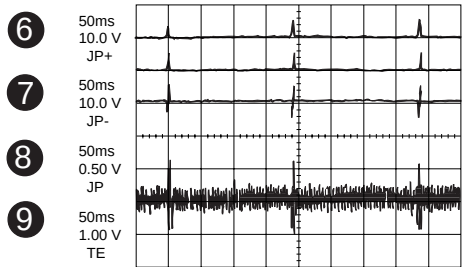
STOP → PLAY

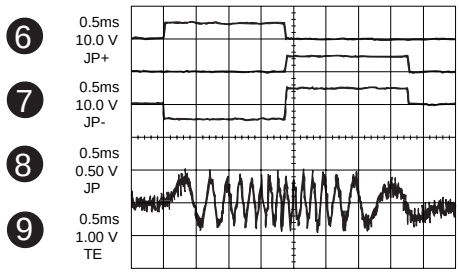
FOCUS — SERCH

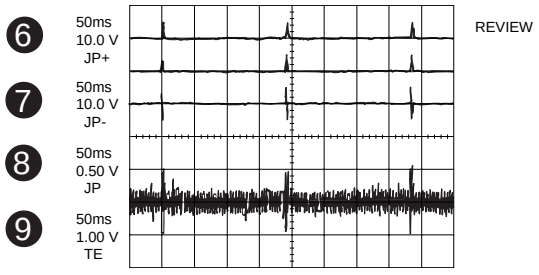


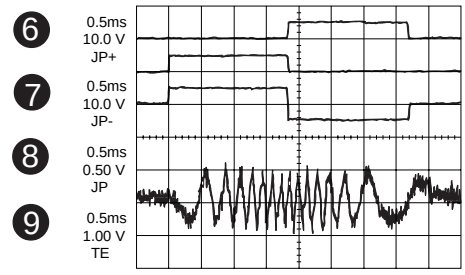








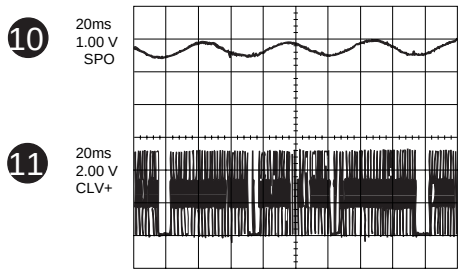




PLAY

NORMAL DISC

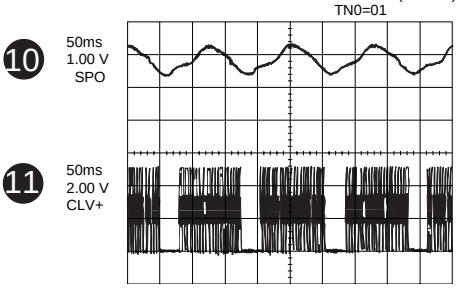
TN0=01



PLAY

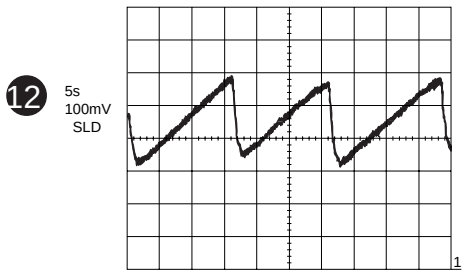
TCD-712 (140mm)

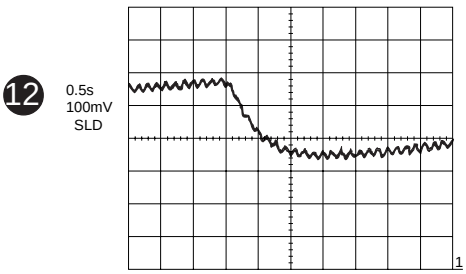
TN0=01



PLAY

TCD-712





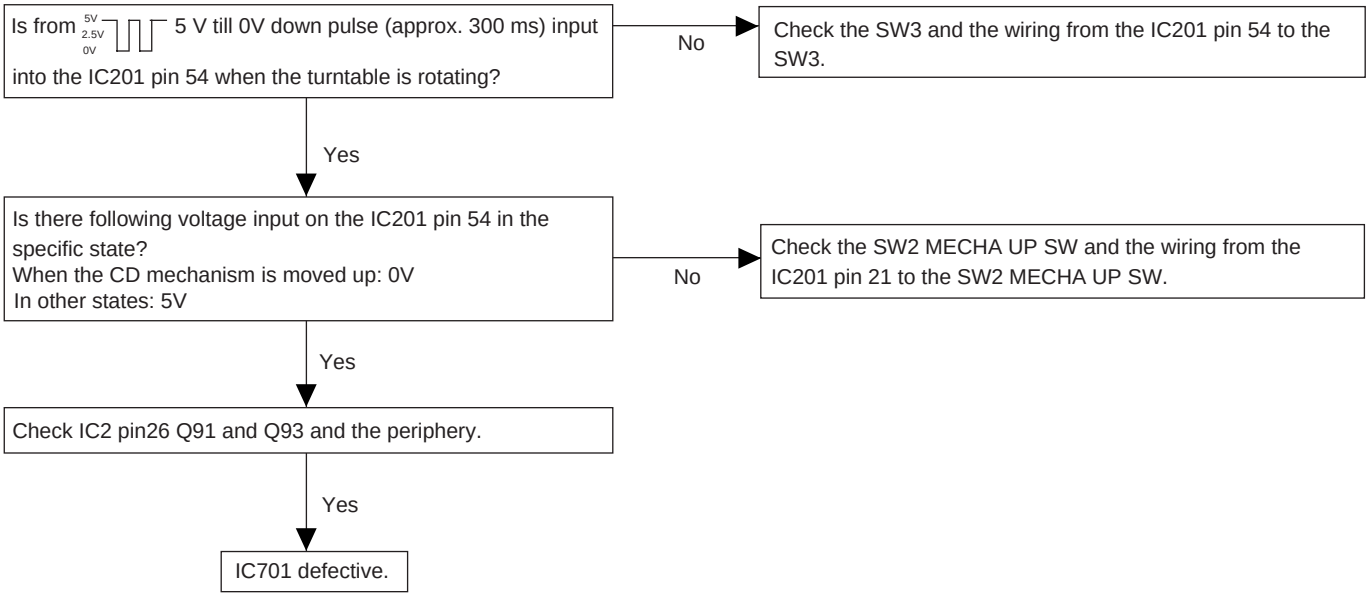
TROUBLESHOOTING (CD SECTION)

When the CD does not function

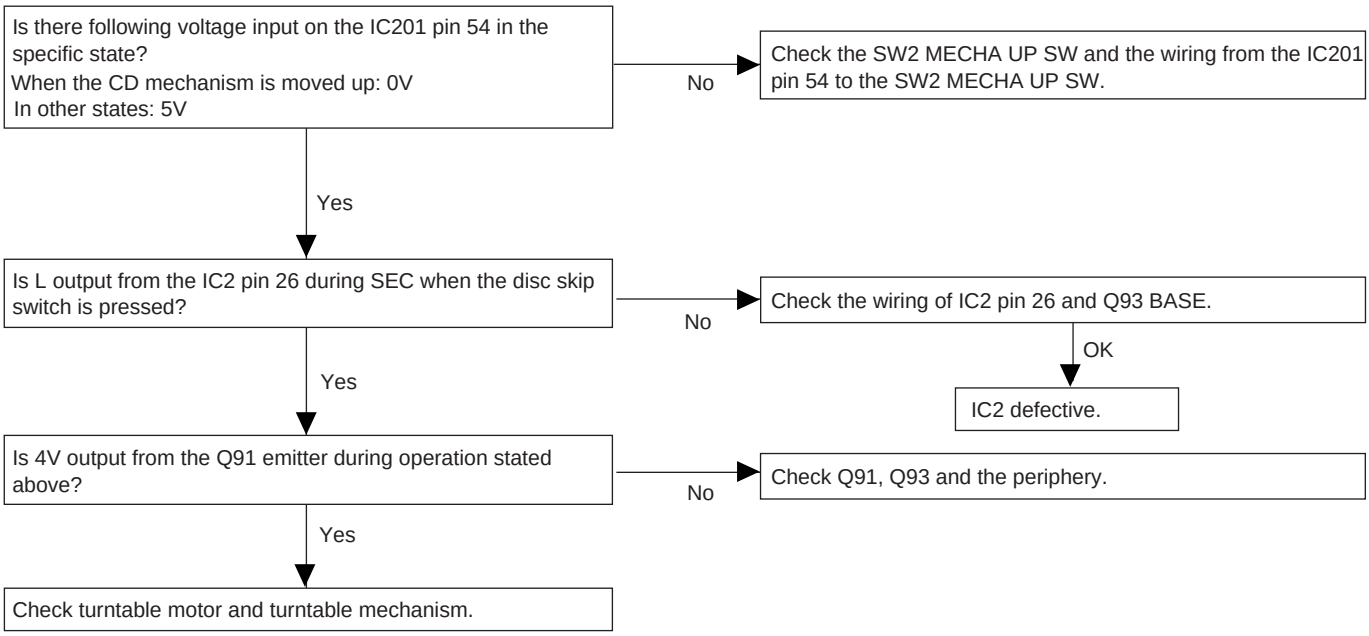
When the CD section does not operate When the objective lens of the optical pickup is dirty,this section may not operate.Clean the objective lens,and check the playback operation.When this section does not operate even after the above step is taken,check the following items.
Remove the cabinet and follow the troubleshooting instructions.
"Track skipping and/or no TOC(Table Of Contents) may be caused by build up of dust other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.
Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.
Do not touch the lens with the bare hand.

• When the turntable fails to stop.


Is from 5V 2.5V 0V 5 V till 0V down pulse (approx. 300 ms) input into the IC201 pin 54 when the turntable is rotating?
No
Check the SW3 and the wiring from the IC201 pin 54 to the SW3.
Yes
Is there following voltage input on the IC201 pin 54 in the specific state?
When the CD mechanism is moved up: 0V
In other states: 5V
No
Check the SW2 MECHA UP SW and the wiring from the IC201 pin 21 to the SW2 MECHA UP SW.
Yes
Check IC2 pin26 Q91 and Q93 and the periphery.
Yes
IC701 defective.

• When turntable fails to move.


Is there following voltage input on the IC201 pin 54 in the specific state?
When the CD mechanism is moved up: 0V
In other states: 5V
No
Check the SW2 MECHA UP SW and the wiring from the IC201 pin 54 to the SW2 MECHA UP SW.
Yes
Is L output from the IC2 pin 26 during SEC when the disc skip switch is pressed?
No
Check the wiring of IC2 pin 26 and Q93 BASE.
OK
IC2 defective.
Yes
Is 4V output from the Q91 emitter during operation stated above?
No
Check Q91, Q93 and the periphery.
Yes
Check turntable motor and turntable mechanism.

• When the CD tray fails to open or close.

Is there following voltage input in specific state of IC701 pin 53?
Open state: 0V
Close state: 0V
Intermediate state between open state and close state: 5V

No → Check the OPEN CLOSE SW and the wiring from the IC701 pin 53 to the OPEN CLOSE SW.

Yes ↓

Is H output to IC2 pin 24 or 25 for 7 seconds when the OPEN/CLOSE key is pressed?IC81 is defective. Replace it.

No → Check the wiring of the IC2 pins 24 and 25, IC81 pins 1 and 3.

OK ↓

IC2 defective.

Yes ↓

Is 4V output between IC81 pins 3 and 7 during operation stated above?

No → Check the periphery of IC81.

OK ↓

IC81 defective.

Yes ↓

Check the loading motor (M3) and the loading mechanism.

• The CD function will not work.

The CD operating keys don't work.

Yes ↓

Check the CD, DSP, power supply, and 16.93 MHz clock, and reset terminal.

Yes ↓

Check the waveform of SCK, SO (DATA) and SI (COMM).

Yes ↓

See if the pick-up is in the PICKUP IN SW position.

Yes ↓

If the items mentioned above are OK, check the main microcomputer IC701.

• The CD operating keys work.

Check the Focus - HF system.

Playback can be performed without a disc.

Yes ↓

Does the pick-up move up and down twice?

Yes → Focus search OK

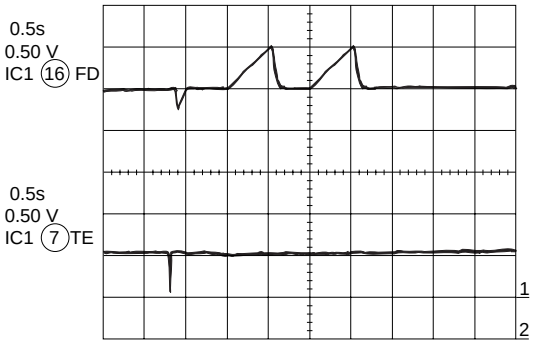
No ↓

Does the output waveform of IC1(16)(FD) match that shown in Fig. 47?

Yes → Check the area around IC3-CNP2.

No ↓

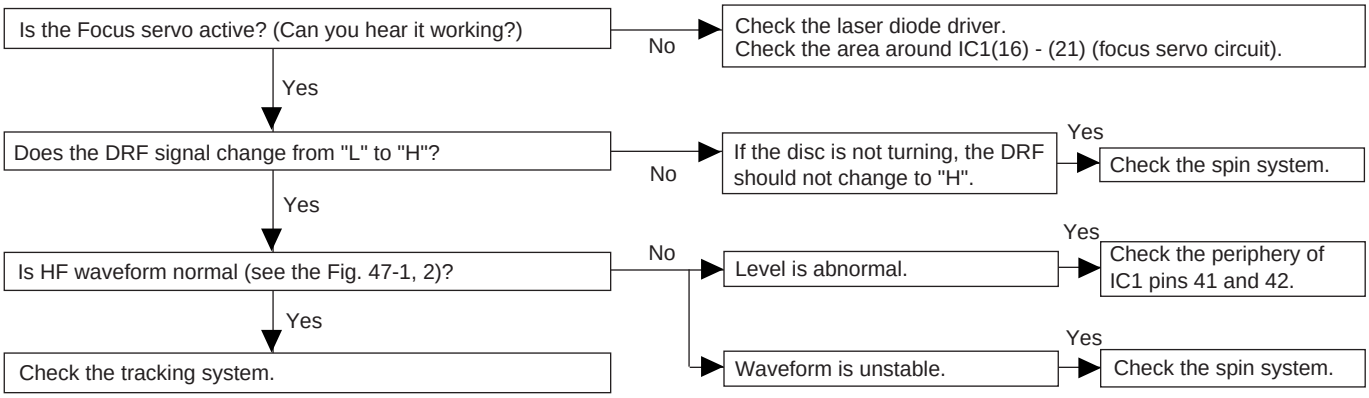
Check the IC1(50)(CLK) line, 4MHz.
Check the microcomputer data on pins (51)(CL), (52)(DAT) and (53)CE.



Focus search is performed two times when play operation is done without disc.

Figure 46

• Playback can only be performed when a disc is loaded.


Is the Focus servo active? (Can you hear it working?)
No
Check the laser diode driver.
Check the area around IC1(16) - (21) (focus servo circuit).
Yes
Does the DRF signal change from "L" to "H"?
No
If the disc is not turning, the DRF should not change to "H".
Yes
Check the spin system.
Yes
Is HF waveform normal (see the Fig. 47-1, 2)?
No
Level is abnormal.
Yes
Check the periphery of IC1 pins 41 and 42.
Yes
Check the tracking system.
Waveform is unstable.
Yes
Check the spin system.

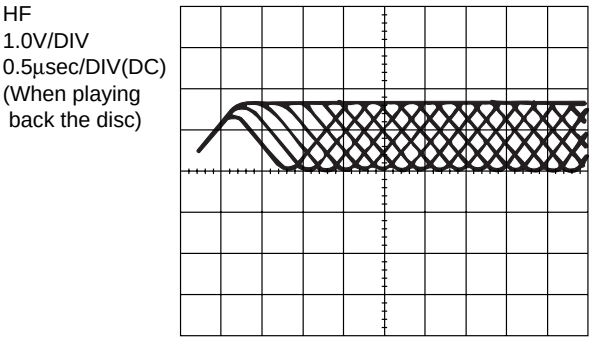


Figure 47-1

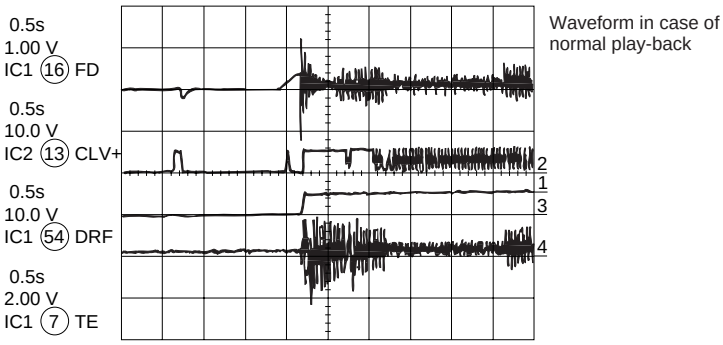
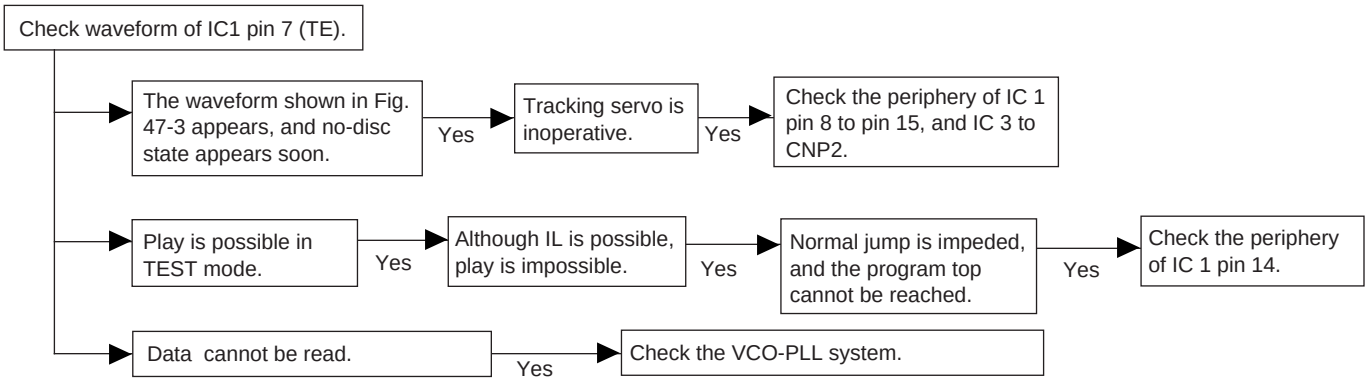


Figure 47-2

• Check the tracking system.


Check waveform of IC1 pin 7 (TE).
The waveform shown in Fig. 47-3 appears, and no-disc state appears soon.
Yes
Tracking servo is inoperative.
Yes
Check the periphery of IC 1 pin 8 to pin 15, and IC 3 to CNP2.
Play is possible in TEST mode.
Yes
Although IL is possible, play is impossible.
Yes
Normal jump is impeded, and the program top cannot be reached.
Yes
Check the periphery of IC 1 pin 14.
Data cannot be read.
Yes
Check the VCO-PLL system.

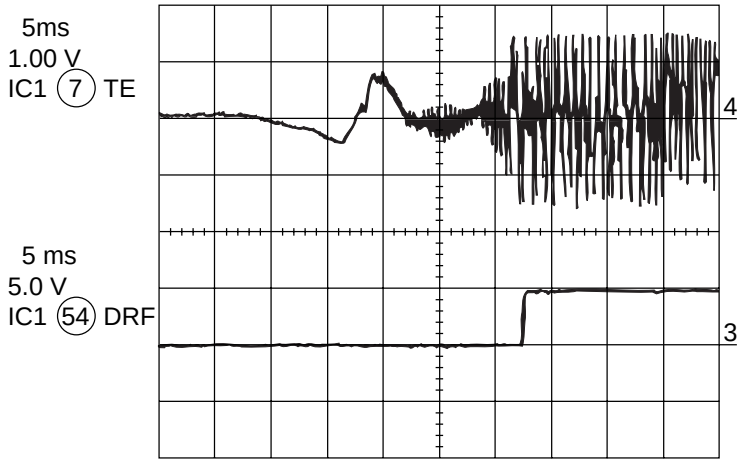


Figure 47-3

• Checking the spin system.

Play operation is performed without disc.

Yes

The turntable rotates a little. — Yes → The spin driver circuit is normal.

No

The turntable fails to rotate or rotates at high speed. — Yes → Check the periphery of IC1 pins 23 to 27, pin 39, and pin 40, IC2 pin 12 and pin 13, IC3 to CNP3.

• Checking the VCO-PLL system

Play operation is performed when disc exits.

Yes

Although HF waveform is normal, TOC data cannot be read. — Yes → Check PDO waveform (Fig. 48).

Abnormal

Check the IC1 pins 43 and 44, IC2 pins 3, 5, 7, 10, and 11.

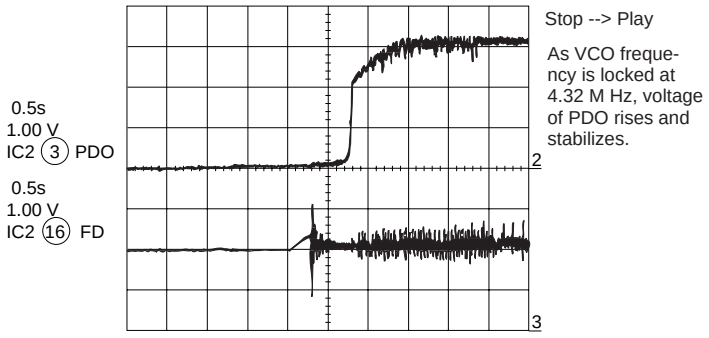


Figure 48

• Although HF waveform is normal and the time indication is normal, no sound is emitted.

Check IC 2 pin 48 (EFLG). — No → Usually, the number of pulses of flawless disc is 100 pulses/sec or less.

Yes

Check IC2 pins 37, 40.

Abnomal

Check IC 601 and POWER AMP IC 901.

FUNCTION TABLE OF IC

IC2 VHiLC78622K-1:Servo/Signal Control(LC78622K) (1/2)

Pin No.	Terminal Name	Input/Output	Function
1	DEFI	Input	Input terminal of defect detection signal (DEF). (Connected to OV when not used.)
2	TAI	Input	For PLL: Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.
3	PDO	Output	Output terminal of phase comparison for external VCO control.
4	VVSS	—	Ground terminal for integrated VCO. Surely connected to 0V.
5	ISET	Input	Resistance connection terminal for current adjustment of PDO output.
6	VVDD	—	Power terminal for integrated VCO.
7	FR	Input	VCO frequency range adjustment.
8	VSS	—	Ground terminal of digital system. Surely connected to 0V.
9	EFMO	Output	For slice level control: EFM signal output terminal.
10	EFMIN	Input	EFM signal input terminal.
11	TEST2	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.
12	CLV+	Outout	Output for disk motor control. 3 values can be output with the commands.
13	CLV-	Output	Output for disk motor control. 3 values can be output with the commands.
14	V/P	Output	Monitor output terminal for automatic switch of rough servo/phase control. "H" for rough servo, and "L" for phase servo.
15	HLF	Intput	Input terminal of track detection signal. Schmit input.
16	TES	Input	Input terminal of tracking error signal. Schmit input.
17	TOFF	Output	Tracking OFF output terminal.
18	TGL	Output	Output terminal for switch of tracking gain "L" increases the gain.
19	JP+	Output	Output for track jump control. 3 values can be output with the commands.
20	JP-	Output	Output for track jump control. 3 values can be output with the commands.
21*	PCK	Output	Clock monitor terminal for EFM data replay. 4,3218MHz as the phase clock.
22*	FSEQ	Output	Output terminal synchronous signal detection. "H" is output when synchronous signal detected by EFM signal matches synchronous signal internally generated.
23	VDD	—	Power terminal of digital system.
24	CONT1	Input/Output	General purpose input/output terminal 1. Controlled with serial data command from micro computer. When not used, set it as the input terminal and open it by connecting to 0V, or set it as the output terminal and open it.
25	CONT2	Input/Output	General purpose input/output terminal 2
26	CONT3	Input/Output	General purpose input/output terminal 3
27	CONT4	Input/Output	General purpose input/output terminal 4
28*	CONT5	Input/Output	General purpose input/output terminal 5
29*	EMPH	Output	Difference monitor terminal At "H", deemphasis disk is being replayed.
30*	C2F	Output	C2 flag output terminal.
31	DOUT	Output	Output terminal of digital OUTPUT. (EIAJ format)
32*	TEST3	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.
33	TEST4	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.
34	N.C.	—	Terminal not used. Open during operation.
35*	MUTEL	Output	L channel 1 bit DAC: Mute output terminal for L channel.
36	LVDD	—	Power terminal for L channel.
37	LCHO	Output	L channel output terminal.
38	LVSS	—	Ground terminal for L channel Surely connected to 0V.
39	RVSS	—	R channel 1 bit DAC: Ground terminal for R channel Surely connected to 0V.
40	RCH0	Output	R channel output terminal.
41	RVDD	—	Power terminal for R channel.
42*	MUTER	Output	Mute output terminal for R channel.
43	XVDD	—	Power terminal for quartz oscillation.
44	XOUT	Output	Ground terminal of 16.9344 MHz quartz oscillator.
45	XIN	Input	Ground terminal of 16.9344 MHz quartz oscillator.
46	XVSS	—	Ground terminal for quartz oscillation. Surely connected to 0V.
47*	SBSY	Output	Output terminal of synchronous signal of subcode block.
48*	EFLG	Output	Correction monitor terminal of C1, C2, single and double.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC2 VHiLC78622K-1:Servo/Signal Control(LC78622K) (1/2)

Pin No.	Terminal Name	Input/Output	Function
49*	PW	Output	Output terminal of subcodes P, A, R, S, T, U and W.
50*	SFSY	Output	Output terminal of synchronous signal of subcode frame. It drops when subcode stands by.
51	SBCK	Input	Clock input terminal to read subcode. Schmit input (Connected to 0V when not used.)
52*	FSX	Output	Output terminal of synchronous signal of 7.35kHz divided from quartz oscillation.
53	WRQ	Output	Output terminal to stand by output of subcode Q.
54	RWC	Input	Input terminal of read/write. Schmit input.
55	SQOUT	Output	Output terminal of subcode Q.
56	COIN	Input	Command input terminal from microcomputer.
57	$\overline{CQCK}$	Input	Clock input terminal to fetch command input, or pick up subcode from SQOUT. Schmit input
58	$\overline{RES}$	Input	Reset input terminal of LC78622. When turning on power, set it at "L".
59*	TST11	Output	Output terminal for test. Used in the open state ("L" output as ordinary).
60*	16M	Output	Output terminal of 16.9344Hz.
61	4.2M	Output	Output terminal of 4.2336MHz.
62	TEST5	Input	Input terminal for test Pull-down resistor is integrated. Surely connected to 0V.
63	$\overline{CS}$	Input	Chip selection input terminal. Pull-down resistor is integrated. Connected to 0when not controlled.
64	TEST1	Input	Input terminal for test Pull-down resistor is integrated. Surely connected to 0V.

Note: The same potential must be supplied to the power terminals (VDD, VVDD, LVDD, RVDD, XVDD).

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

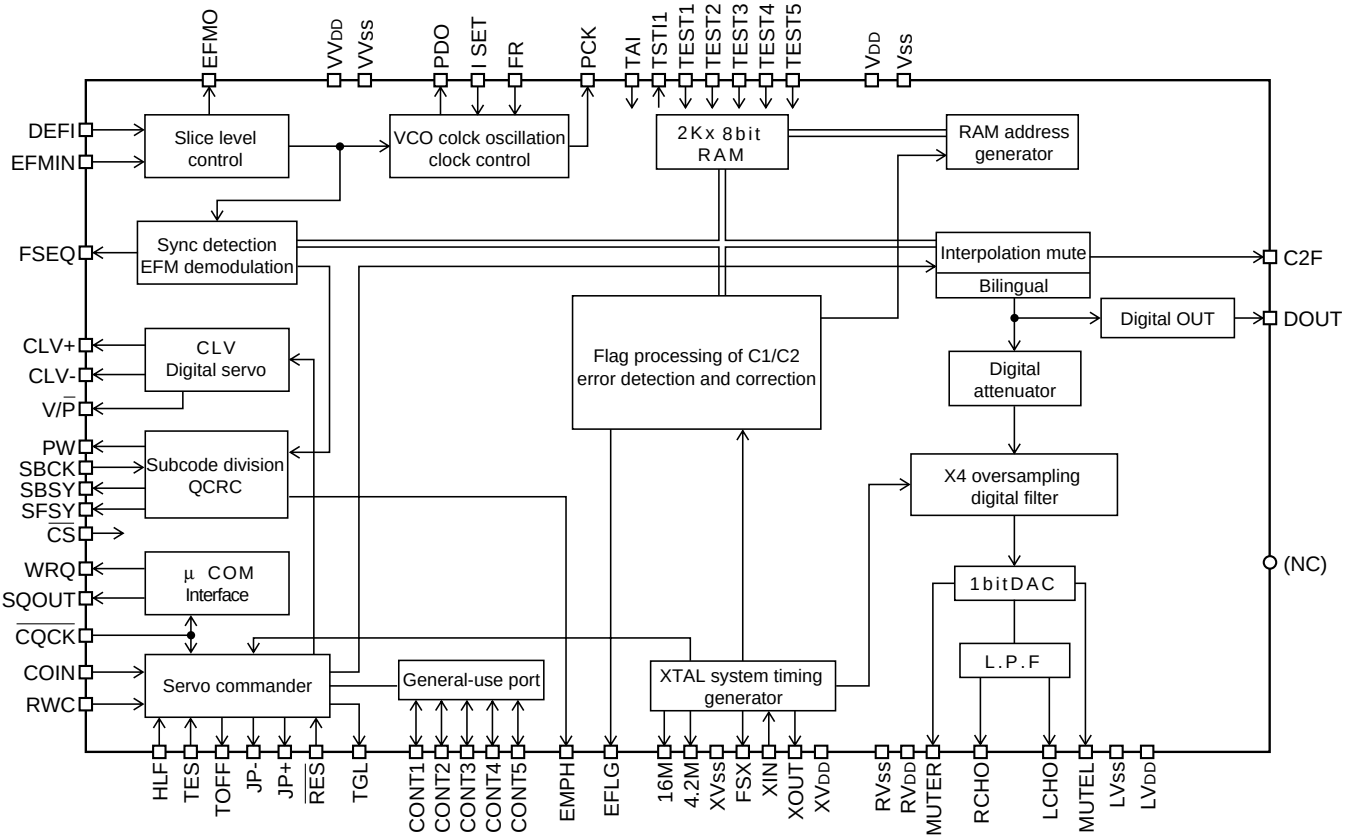


Figure 50 BLOCK DIAGRAM OF IC

IC1 VHiLA9241M/-1:Servo Amp.,(LA9241M) (1/2)

Pin No.	Port Name	Function
1	FIN2	Connection pin for photodiode of pickup. RF signal is generated through addition with FIN pin, and FE signal is generated through subtraction.
2	FIN1	Connection pin for photodiode of pickup.
3	E	Connection pin for photodiode of pickup. TE signal is generated through subtraction with F pin.
4	F	Connection pin for photodiode of pickup.
5	TB	Pin for input of DC component of TE signal.
6	TE-	Pin to connect gain setting resistor of TE signal to TE signal.
7	TE	TE signal output pin.
8	TESI	TES (Track error sense) comparator input pin. TE signal is band-passed and input.
9	SCI	Input pin for shock detection.
10	TH	Pin to set time constant of tracking gain.
11*	TA	TA amplifier output pin.
12	TD-	Pin to compose tracking phase compensation constant between TD and VR pins.
13	TD	Pin to set tracking phase compensation.
14	JP	Pin to set amplitude of tracking jump signal (kick pulse).
15	TO	Tracking control signal output pin.
16	FD	Focusing control signal output pin.
17	FD-	Pin to compose focusing phase compensation constant between FD and FA pins.
18	FA	Pin to compose focusing phase compensation constant between FD-/FA-pins.
19	FA-	Pin to compose focusing phase compensation constant between FA and FE pins.
20	FE	Output pin of FE signal.
21	FE-	Pin to connect gain setting resistor of FE signal across TE pin.
22	AGND	GND for analog signal.
23	SP	Single end output for CV+ and CV- pin input.
24	SPI	Spindle amplifier input.
25	SPG	Pin to connect gain setting resistor in the 12cm mode of spindle.
26	SP-	Pin to connect spindle phase compensation constant together with SPD pin.
27	SPD	Spindle control signal output pin.
28	SLEQ	Pin to connect thread phase compensation constant.
29	SLD	Thread control signal output pin.
30	SL-	Input pin of thread feed signal from micro computer.
31	SL+	Input pin of thread feed signal from micro computer.
32	JP-	Input pin of tracking jump signal from DSP.
33	JP+	Input pin of tracking jump signal from DSP.
34	TGL	Input pin of tracking gain control signal from DSP. TGL = Gain low at "H"
35	TOFF	Input pin of tracking off control signal from DSP. TOFF = Off at "H"
36	TES	Output pin of TES signal to DSP.
37	HFL	(HIGH FREQUENCY LEVEL) is used to judge whether main beam is positioned on the bit or on the mirror.
38	SLOF	Thread servo off control input pin.
39	CV-	Pin to input CLV error signal from DSP.
40	CV+	Pin to input CLV error signal from DSP.
41	RFSM	RF output pin.
42	RFS-	Pin to set gain of RF and set 3T compensation constant together with RFSM pin.
43	SLC	(SLICE LEVEL CONTROL) is the output pin to control of the level of the data slice with RF waveform DSP.
44	SLI	Input pin to control the level of data slice with DSP.
45	DGND	GND pin in the digital system.
46	FSC	Output pin for focus search smoothening capacitor.
47	TBC	(Tracking Balance Control) Pin to set EF balance variable range.
48*	NC	————
49	DEF	Defect detection output pin of disk.
50	CLK	Reference clock input pin. 4.23MHz of DSP is input.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1 VHiLA9241M/-1:Servo Amp.,(LA9241M) (2/2)

Pin No.	Port Name	Function
51	CL	Micro computer command clock input pin.
52	DAT	Micro computer command data input pin.
53	CE	Micro computer command chip enable input pin.
54	DRF	(DETECT RF) RF level detection output.
55	FSS	(Focus Serch Select) Pin to switch focus search mode. (± search/+ search for reference voltage)
56	VCC2	VCC pin for servo system and digital system.
57	REFI	Pin to connect pass control for reference voltage.
58	VR	Reference voltage output pin.
59	LF2	Pin to set defect detection time constant of disk.
60	PH1	Pin to connect capacitor for peak hold of RF signal.
61	BH1	Pin to connect capacitor for bottom hold of RF signal.
62	LDD	APC circuit output pin.
63	LDS	APC circuit output pin.
64	VCC1	RF system VCC pin.

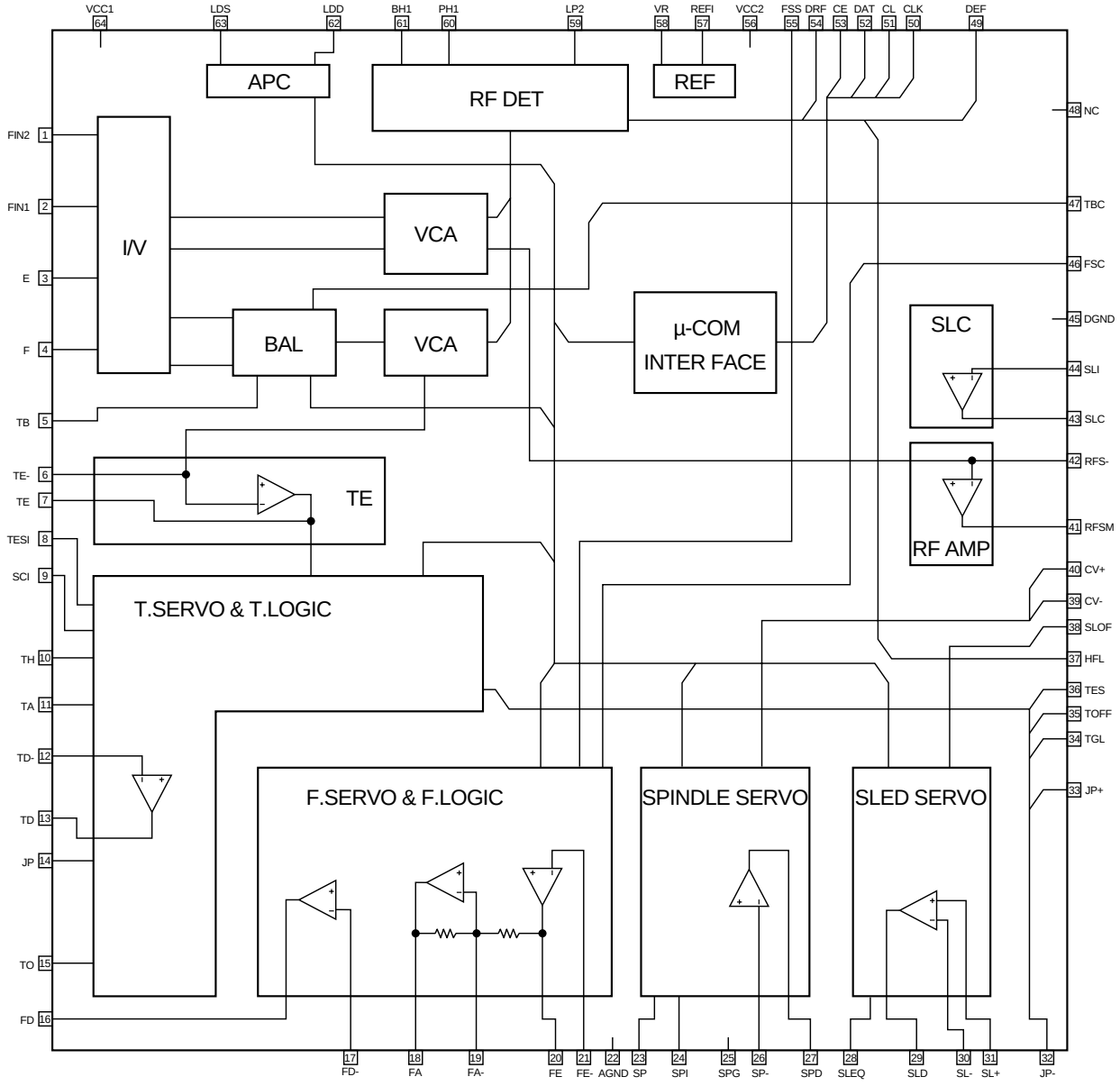


Figure 52 BLOCK DIAGRAM OF IC

IC201 RH-iX0222AWZZ:System Microcomputer (IX0222AW) (1/2)

Pin No.	Terminal Name	Input/Output	Function
1*	————	Output	————
2	REC/PB	—	Record/Playback selection signal
3*	————	Output	————
4*	CD MUT	Output	CD MUT signal
5	CD RES	Output	CD DSP RESET signal
6	CD SL-	Output	Slide return signal
7	CD SL+	Output	Slide feed signal
8	VDD	—	Power connection terminal
9	CD CQCK	Output	CD IC control signal
10	CD COIN	Output	CD IC control signal
11	CD SQOUT	Input	CD IC control signal
12	CD WRQ	Input	CD IC control signal
13	CD RWC	Output	CD IC control signal
14	SCK	Input	Main µCOM (RH-iX0223AWZZ) control signal
15	SO	Output	Main µCOM (RH-iX0223AWZZ) control signal
16	SI	Input	Main µCOM (RH-iX0223AWZZ) control signal
17	RESET	Input	Main µCOM (RH-iX0223AWZZ) control signal
18	STROBE	Input	Main µCOM (RH-iX0223AWZZ) control signal
19	CD PU-IN SW	Input	Pickup position detection
20	AVSS	—	To be connected to GND
21	CD DRF	Input	CD RF level detection input H: When RF level is H
22	T1 RUN	Input	Tape 1: Rotation pulse input
23	T2 RUN	Input	Tape 2: Rotation pulse input
24	SPEANA 5	Input	63Hz BPF spectrum analyzer input
25	SPEANA 4	Input	250Hz BPF spectrum analyzer input
26	SPEANA 3	Input	1kHz BPF spectrum analyzer input
27	SPEANA 2	Input	4kHz BPF spectrum analyzer input
28	SPEANA 1	Input	16kHz BPF spectrum analyzer input
29	AVDD	—	A/D converter analog positive power
30	AVREF	—	A/D converter reference power
31	TAPE CUM SW	Input	Tape mechanism cam SW input terminal
32*	————	—	No connected
33	VSS	—	To be connected to GND
34	X1	—	Main clock terminal, not used
35	X2	—	Main clock terminal, not used
36*	LINE MUT	Output	Line mute output, not used
37	SURROUND MUT	Output	Surround mute output
38	CENTER MUT	Output	Center SP output mute output
39	SYSTEM MUT	Output	System mute output
40	MIC	Input	Mic input terminal (for detection)
41	EN	Output	DOLBY PRO logic IC control signal
42	DATA	Output	DOLBY PRO logic IC control signal
43	CLK	Output	DOLBY PRO logic IC control signal
44	SP DET	Input	Speaker output error detection input Occurrence of error: L
45	POWER	Output	Set power control output Power ON: H
46*	RELAY	Output	Speaker output relay control output Relay ON: H
47	TAPE TS CrO SW	Input	Tape mechanism 2 CrO_2 detection input CrO_2: H
48	VSS	Input	Digital GND terminal
49	TAPE F/R SPEED	Output	Tape feed/return
50	TAPE SOL	Output	Tape mechanism solenoid control output Attraction: L
51	TAPE MOTOR	Output	Tape mechanism motor control output

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC201 RH-iX0222AWZZ:System Microcomputer (IX0222AW) (2/2)

Pin No.	Terminal Name	Input/Output	Function
52	VDD	—	Positive power supply
53	CD O/C SW	Input	CD open-close switch input
54	DISC No. SW	Input	CD turntable position detection input
55	CD U/D SW	Input	CD mechanism UP/DOWN chucking detection input
56	T1 CrO SW	Input	Tape 1 CrO_2 detection SW input
57	QS-AC	Output	Q-SOUND position selection output
58	QS-MO	Output	Q-SOUND position selection output
59	QS-BYPASS-AR	Output	Q-SOUND position selection output
60*	–		
61	QS-PASS	Input	Q-SOUND Detection input, not applied in this machine
62	SPAN 9K/10K	Input	Tuner span selector 9 kHz/10 kHz selection input
63	DOLBY	Input	DOLBY detection input, not applied in this machine
64	SRS	Input	SRS detection input, not applied in this machine
65	BALANCE	Input	BALANCE detection input, not applied in this machine
66	4SP	Input	4SP detection input, not applied in this machine
67	TAPE A-FP SW	Input	Tape A side miserase preventing SW input
68	TAPE B-FP SW	Input	Tape B side miserase preventing SW input
69	TAPE PB MUT	Output	Tape playback mute output
70	TAPE T1/T2	Output	Tape 1/2 selection
71	VLOAD	—	To be connected to GND
72	TAPE BIAS	Output	Tape bias circuit selection
73*	SRS ON/OFF	Output	SRS Control
74*	SRS 1/2	Output	SRS Control
75	TAPE BEET CUT	Output	Beat cancel signal control output
76*	TAPE HI SPEED	Output	Tape mechanism High-Low speed selection
77*	————	—	Not used
78*	————	—	Not used
79*	TAPE PB EQ	Output	Tape circuit playback Eq selection
80	TAPE REC MUT	Output	Tape circuit record muting output

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

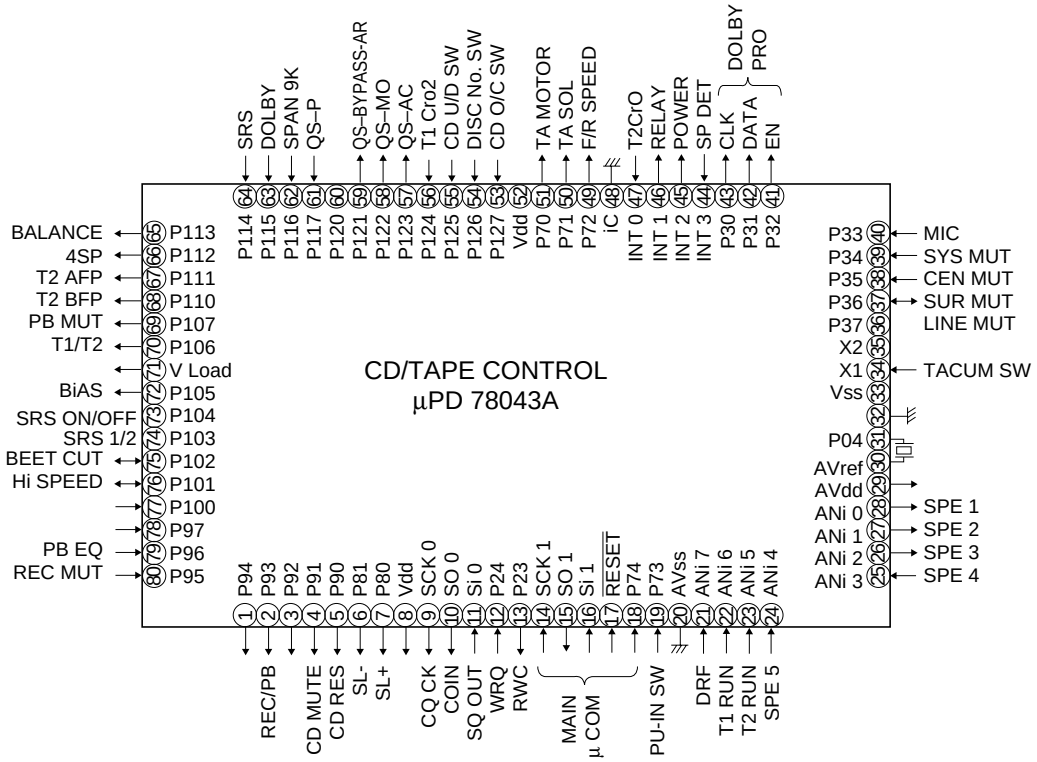


Figure 54 BLOCK DIAGRAM OF IC

IC701 RH-iX0223AWZZ:System Microcomputer (IX0223AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1-5	P94/FIP6-P90/FIP2	G06-G02	Output	FL display tube grid drive
6,7	P81/FIP1,P80/FIP0	G01,G00	Output	FL display tube grid drive
8	VDD	VDD	—	Positive power supply
9	P27/SCK0	C²B CLK	Output	C²B serial clock output
10	P26/SO0/SB1	C²B DO	Output	C²B serial data output
11	P25/SI0/SB0	C²B DI	Input	C²B serial data input
12	P24/BUSY	C²B CE	Output	C²B serial CE output
13	P23/STB	SUB STB	Output	Serial strobe output for CD/TAPE microcomputer
14	P22/SCK1	SUB SCK	Output	Serial clock output for CD/TAPE microcomputer
15	P21/SO1	SUB SO	Output	Serial data output for CD/TAPE microcomputer
16	P20/SI1	SUB SI	Input	Serial strobe input for CD/TAPE microcomputer
17	RESET	RESET	Input	Reset input
18	P74	SUB RES	Output	Reset output for CD/TAPE microcomputer
19	P73	TUN MUTE	Output	Tuner TUN MUT output
20	AVSS	AVSS	—	Analog power supply for A/D converter
21	P17/ANI7	TUN SD	Input	Tuner station detection input
22	P16/ANI6	TUN SM	Input	Tuner signal meter input
23	P15/ANI5	KEY IN5	Input	Key input 37-45
24	P14/ANI4	KEY IN4	Input	Key input 28-36
25	P13/ANI3	KEY IN3	Input	Key input 19-27
26	P12/ANI2	KEY IN2	Input	Key input 10-18
27	P11/ANI1	KEY IN1	Input	Key input 1-9
28	P10/ANI0	ENF IN	Input	Tuner initial setting input
29	AVDD	AVDD	—	Analog positive power supply for A/D converter
30	AVREF	AVREF	—	Reference power supply for A/D converter
31	P04/XT1	VSS	Input	Sub-clock input To be connected to Vss
32*	XT2	N.C	—	Sub-clock output OPEN
33	VSS	VSS	—	GND power
34	X1	X1	Input	Main clock 4.194304 MHz
35	X2	X2	Output	Main clock 4.194304 MHz
36	P37	LED LCK	Output	LED IC serial clock output BU2092 LCK
37	P36/BUZ	LED DATA	Output	LED IC serial data output BU2092 DATA
38	P35/PCL	LED CLK	Output	LED IC serial clock output BU2092CLK
39*	–	–	Input	–
40*	–	–	Input	–
41*	–	–	Output	–
42	P31/TO1	SYS MUTE	Output	System mute output
43	P30/TO0	POWER	Output	POWER output
44	AP-P		Intput	Connect VDD
45*	P02/INTP2		Output	
46	P01/INTP1	SYS STOP	Input	Power failure input
47	P00/INTP0/TI0	REM IN	Input	Remote Control Input
48	IC	VSS	—	Connect with GND
49*	P72		Output	No use
50*	P71		Output	No use
51*	P70		Output	No use
52	VDD	VDD	—	Positive power supply
53*	P127/FIP33		—	No use
54-60	P126/FIP32-P120/FIP26	S21-S15	Output	FL display tube segment drive
61-68	P117/FIP25-P110/FIP18	S14-S07	Output	FL display tube segment drive
69,70	P107/FIP17,P106/FIP16	S06,S05	Output	FL display tube segment drive

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC701 RH-iX0223AWZZ:System Microcomputer (IX0223AW) (2/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
71	VLOAD	VLOAD	—	Negative power supply for FL drive To be connected to -30V
72-76	P105/FIP15-P101/FIP11	S04-S00	Output	FL display tube segment drive
77	P100/FIP10	G10	Output	FL display tube grid drive
78-80	P97/FIP9-P95/FIP7	G09-G07	Output	FL display tube grid drive

IC601 VHiLC75396N-1:Audio Processor (LC75396N)

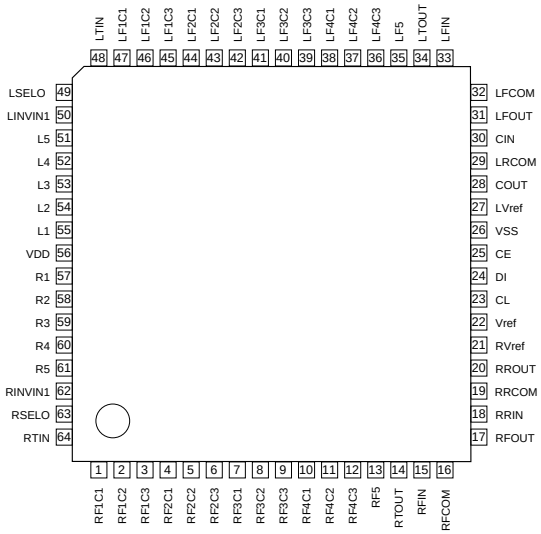


Figure 56-1 BLOCK DIAGRAM OF IC

IC501 VHiLV1035M/-1: Dolby Pro Logic Decorder (LV1035M)

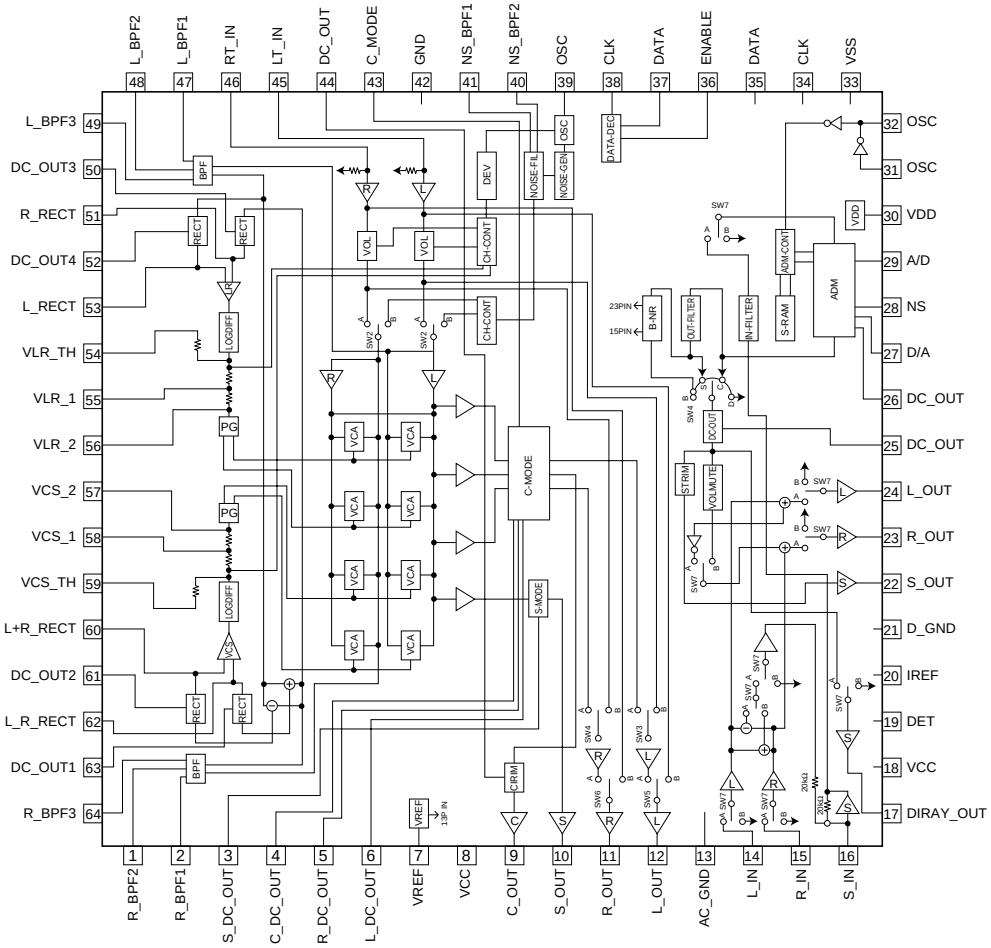


Figure 56-2 BLOCK DIAGRAM OF IC

IC601 VHiLC75396N-1:Audio Processor (LC75396N)

Pin No.	Terminal Name	Function
1-3*	RF1C1-RF1C3	Terminal to connect capacitor of filter configuration for equalizer F1 band Connect the capacitor between LF1C1(RF1C1) and LF1C2(RF1C2) between LF1C2 (RF1C2) and LF1C3(RF1C3).
4-6	RF2C1-RF2C3	Terminal to connect capacitor of filter configuration for equalizer F2 band Connect the capacitor between LF2C1(RF2C1) and LF2C2(RF2C2) between LF2C2 (RF2C2) and LF2C3(RF2C3).
7-9	RF3C1-RF3C3	Terminal to connect capacitor of filter configuration for equalizer F3 band Connect the capacitor between LF3C1(RF3C1) and LF3C2(RF3C2) between LF3C2 (RF3C2) and LF3C3(RF3C3).
10-12	RF4C1-RF4C3	Terminal to connect capacitor of filter configuration for equalizer F4 band Connect the capacitor between LF4C1(RF4C1) and LF4C2(RF4C2) between LF4C2 (RF4C2) and LF4C3(RF4C3).
13	RF5	Terminal to connect capacitor of filter configuration for equalizer F5 band Terminal to connect the externally provided capacitor
14	RTOUT	Equalizer output terminal
15	RFIN	Input terminal of Rch front side 4dB step control
16	RFCOM	Common terminal of Rch front side 1dB step control
17	RFOUT	Output terminal of Rch front side control
18	RRIN	Input terminal of Rch rear side 4dB step control
19	RRCOM	Common terminal of Rch rear side 1dB step control
20	RROUT	Output terminal of Rch rear side control
21	RVREF	Internal analog ground terminal
22	VREF	Connect the capacitor of about several 10 uF between Vref and AVSS (VSS) so as to prevent power supply ripple in the VDD/2 voltage generating section.
23	CL	Terminal to input serial data and clock for control
24	DI	Terminal to input serial data and clock for control
25	CE	Chip enable terminal. Data is written in the internal latch with a timing of changing H to L, and the specific analog switch is actuated. Data transfer is enabled on the H level.
26	VSS	GND
27	LVREF	Internal analog ground terminal
28	COUT	Output terminal of Lch rear side control
29	LRCOM	Common terminal of Lch rear side 1dB step control
30	CIN	Input terminal of Lch rear side 4dB step control
31	LFOUT	Output terminal of Lch front side control
32	LFCOM	Common terminal of Lch front side 1dB step control
33	LFIN	Input terminal of Lch front side 4dB step control
34	LTOUT	Equalizer output terminal
35	LF5	Terminal to connect capacitor of filter configuration for equalizer F5 band Terminal to connect the externally provided capacitor
36-38	LF4C3-LF4C1	Terminal to connect capacitor of filter configuration for equalizer F4 band Connect the capacitor between LF4C1(RF4C1) and LF4C2(RF4C2) between LF4C2 (RF4C2) and LF4C3(RF4C3).
39-41	LF3C3-LF3C1	Terminal to connect capacitor of filter configuration for equalizer F3 band Connect the capacitor between LF3C1(RF3C1) and LF3C2(RF3C2) between LF3C2 (RF3C2) and LF3C3(RF3C3).
42-44	LF2C3-LF2C1	Terminal to connect capacitor of filter configuration for equalizer F2 band Connect the capacitor between LF2C1(RF2C1) and LF2C2(RF2C2) between LF2C2 (RF2C2) and LF2C3(RF2C3).
45-47*	LF1C3-LF1C1	Terminal to connect capacitor of filter configuration for equalizer F1 band Connect the capacitor between LF1C1(RF1C1) and LF1C2(RF1C2) between LF1C2 (RF1C2) and LF1C3(RF1C3).
48	LTIN	Equalizer input terminal
49	LSELO	Input selector output terminal
50	LINVIN1	Operational amplifier reverse input terminal for input gain setting
51-55	L5-L1	Input signal terminal
56	VDD	Power terminal
57-61	R1-R5	Input signal terminal
62	RINVIN1	Operational amplifier reverse input terminal for input gain setting
63	RSELO	Input selector output terminal
64	RTIN	Equalizer input terminal

ICT21 VHiLC72720/-1:RDS Decorder (LC72720)

Pin No.	Terminal Name	Input/Output	Function
1	VREF	Output	Reference voltage output (Vdda/2)
2	MPXIN	Input	Base band (multiplex) signal input
3	Vdda	—	Analog system power supply (+5V)
4	Vssa	—	Analog system ground
5	FLOUT	Output	Sub-carrier input (comparator input)
6	CIN	Input	Sub-carrier output (filter output)
7	T1	Input	Test input (to be always connected to ground)
8	T2	Input	Test input (standby control) 0: Normal operation/1: Standby state (crystal oscillation stop)
9*	T3 (RDCL)	Input/Output	Test I/O (RDS clock output)
10*	T4 (RDDA)	Input/Output	Test I/O (RDS data output)
11 *	T5 (RSFT)	Input/Output	Test I/O (Soft judgment control data output)
12	XOUT	Output	Crystal oscillation output
13	XIN	Input	Crystal oscillation input (external reference signal input)
14	Vddd	—	Digital system power supply
15	Vssd	—	Digital system ground
16*	T6 (ERROR/57K/BE1)	Input/Output	Test I/O (Error existence/nonexistence output/playback carrier output/error block number output)
17*	T7 (CORREC/ARI-ID/BE0	Input/Output	Test I/O (Error existence/nonexistence output/SK detection output/error block number output)
18*	SYNC	Input/Output	Block sync detection output
19*	RDS-ID	Output	RDS detection output
20	DO	Output	Data output — Serial data interface (CCB)
21	CL	Input	Clock input — Serial data interface (CCB)
22	DI	Input	Data input — Serial data interface (CCB)
23	CE	Input	Chip enable — Serial data interface (CCB)
24	SYR	Input	Sync and RAM address reset (positive logic)

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

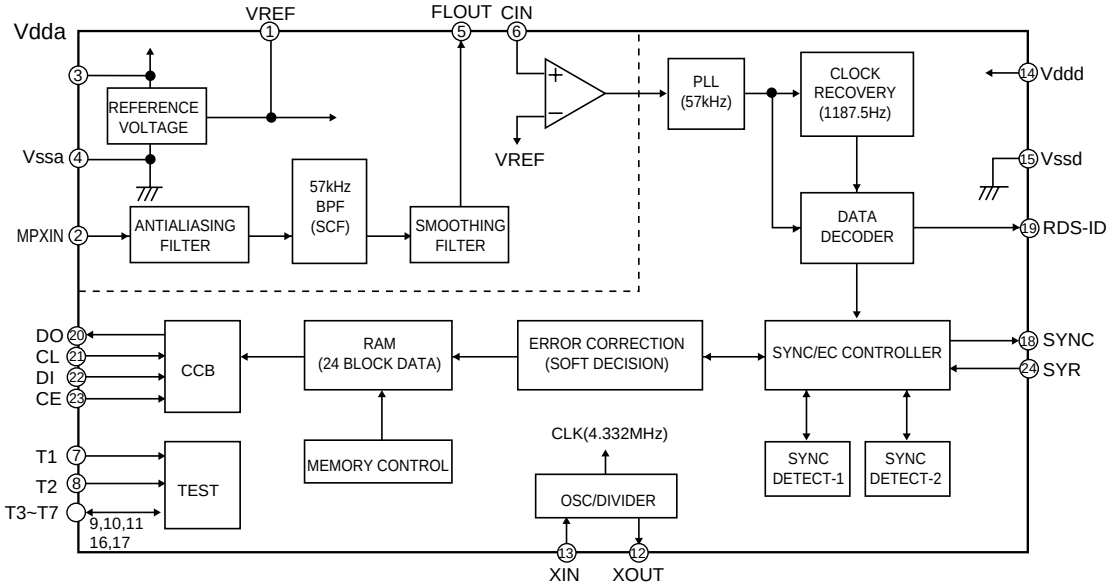


Figure 58 BLOCK DIAGRAM OF IC

IC3 VHiM56748FP-1: Focus/Tracking/Spin/Slide Driver (M56748FP)

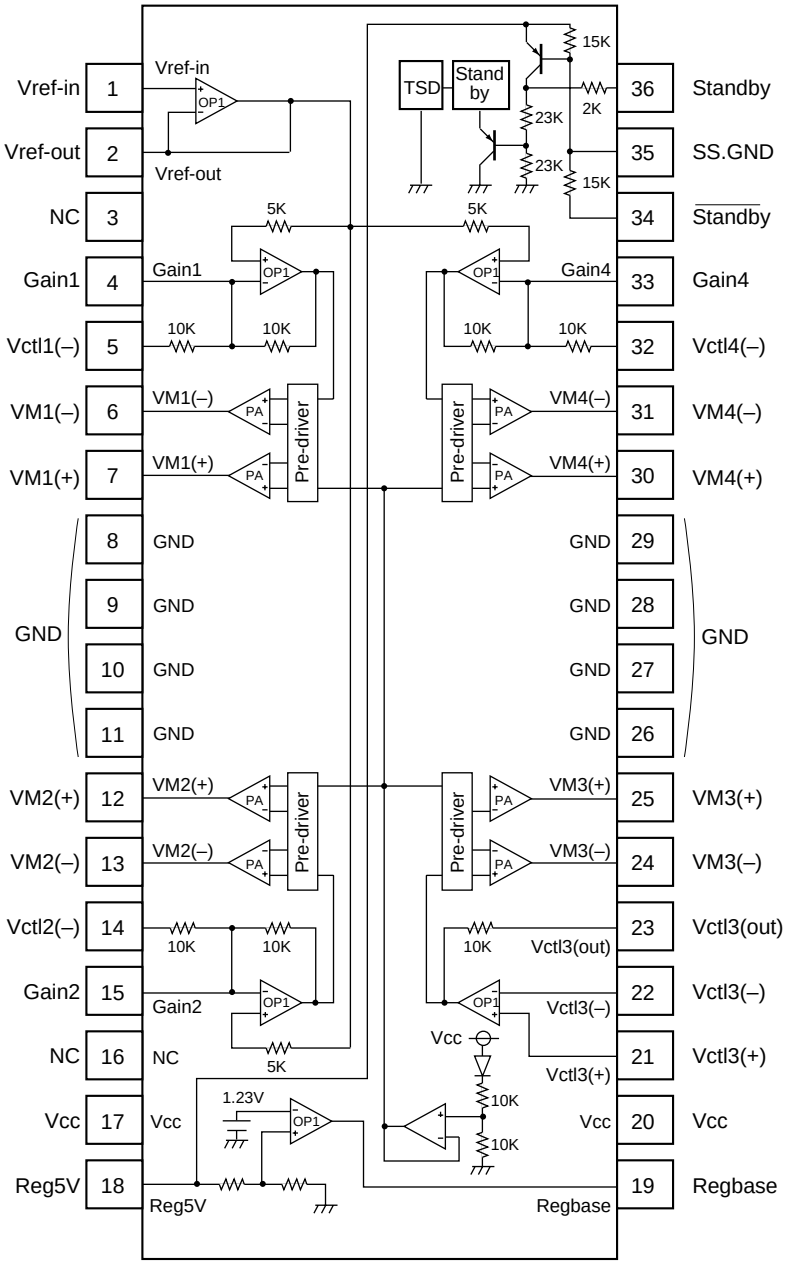


Figure 59-1 BLOCK DIAGRAM OF IC

FL701 : VVKBJ549GK/-1 FL Display

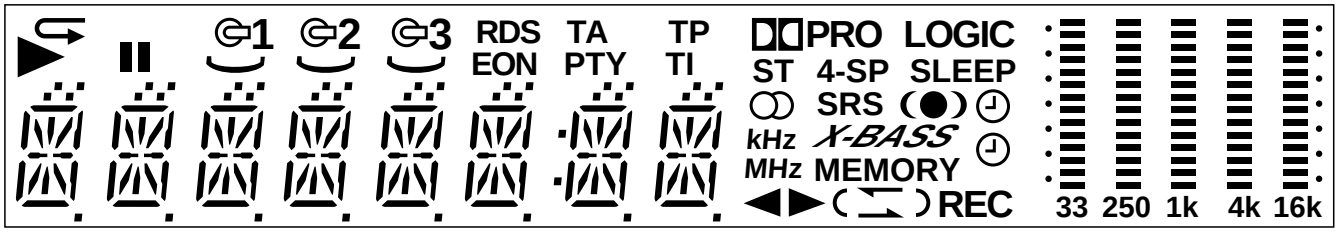
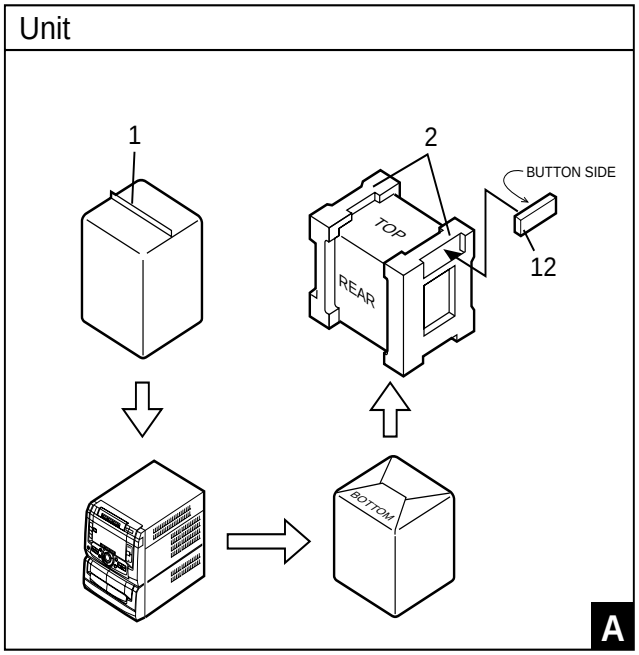


Figure 59-2 FL DISPLAY

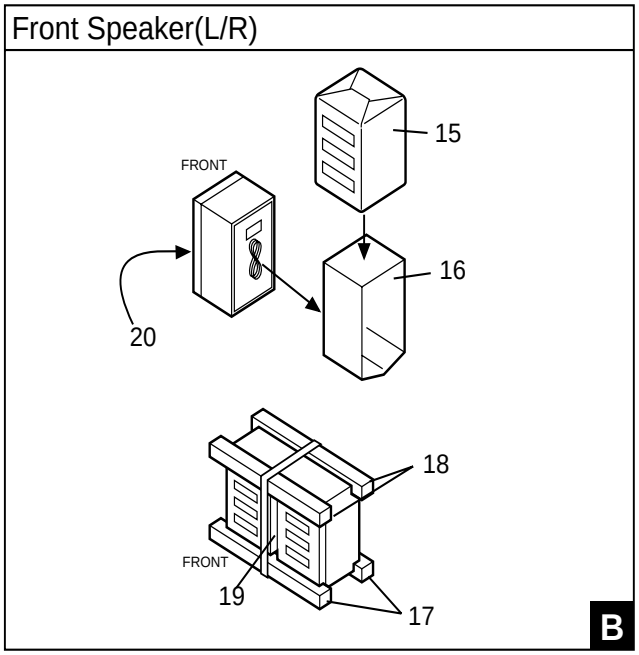
PACKING OF METHOD (FOR U.K. ONLY)

Setting position of switches and knobs	
Tape Mechanism	STOP

Unit



Front Speaker(L/R)



CD-C451H

1.Polyethylene Bag,Unit	SPAKP0013AWZZ1
2.Packing Add.,Unit	SPAKA0192AWZZ
3.Packing Case	SPAKC0696AWZZ
4.Polyethylene Bag,Accessories	92LBAG1460C1
5.Warranty Card	TGAN-3170UMZZ
6.Operaton Manual	TiNSE0222AWZZ
7.Polyethylene Bag,AC Cord	92LBAG1770A
8.AC Power Supply Cord	QACCB0004AW00
9.AM Loop Antenna	QANTL0005AWZZ
10.FM Antenna	92LF-ANT1535A
12.Remote Control	RRMCG0146AWSA
13.Bottom Pad	SPAKZ0438AWZZ
14.Bar Code Label	TLABE0251AWZZ

CP-C451H

15.Polyethylene Bag	92L70032001600
16.Sheet	92L71525003200
17.Packing Add.,Bottom	92L720BPC46200
18.Packing Add.,Top	92L720TPC46200
19.Shield Pad	92L74231121000
20.Label,Feature	92L6100C451H00